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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
726 MINNESOTA AVENUE
KANSAS CITY, KANSAS 66101

November 15, 1993

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Michael A. Stick, Esq.
Butler Rubin Saltarelli & Boyd
Three First National Plaza
Suite 1505
Chicago, Illinios 60602

Kyle Harvey, Esq.
Winston & Straun
35 West Wacker Drive
Chicago, Illinois 60601-9703

Re: Collis Inc.
RCRA Docket No. VII-94-H-0001

Dear Mr. Stick and Ms. Harvey:

Enclosed for your files is an executed copy of the Administrative Order on Consent agreed upon by the above referenced and the Environmental Protection Agency.

Sincerely yours,

Venessa Cobbs

Venessa Cobbs
Regional Hearing Clerk

Enclosure

cc: Audrey B. Asher
Senior Assistant Regional Counsel
U.S. Environmental Protection Agency

bcc: Don Burke - RCRA

UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

REGION 7

IN THE MATTER OF: Collis Inc. 2005 South 19th Street Clinton, Iowa	)	ADMINISTRATIVE ORDER ON CONSENT
	)	U.S. EPA Docket No. VII-94-H-0001
RESPONDENT	)	IAD04773771 Proceeding under Section 3008(h) of the Resource Conservation and Recovery Act, as amended, 42 U.S.C. §6928(h).

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UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

REGION 7

IN THE MATTER OF: Collis Inc. 2005 South 19th Street Clinton, Iowa	ADMINISTRATIVE ORDER ON CONSENT
	U.S. EPA Docket No. VII-94-H-0001
RESPONDENT	IAD04773771 Proceeding under Section 3008(h) of the Resource Conservation and Recovery Act, as amended, 42 U.S.C. §6928(h).

I. JURISDICTION

1. This Administrative Order on Consent ("Order") is issued pursuant to the authority vested in the Administrator of the United States Environmental Protection Agency ("EPA") by section 3008(h) of the Solid Waste Disposal Act, commonly referred to as the Resource Conservation and Recovery Act of 1976 ("RCRA"), as amended by the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. §6928(h). The authority vested in the Administrator to issue orders under §3008(h) of RCRA has been delegated to the Regional Administrators by EPA Delegation Nos. 8-31 and 8-32 dated April 16, 1985, and has been further delegated by the

Regional Administrator for Region 7 to the Director of the Waste Management Division of EPA, Region 7, by Delegation No. R7-8-37, dated May 16, 1988.

2. This Order is issued to Collis Inc. ("Respondent"), the current owner/operator of the facility, located at 2005 South 19th Street, Clinton, Iowa. Respondent consents to and agrees not to contest EPA's jurisdiction to issue this Order or to enforce its terms. Further, Respondent will not contest EPA's jurisdiction to: compel compliance with this Order in any subsequent enforcement proceedings, either administrative or judicial; require Respondent's full or interim compliance with the terms of this Order; or impose sanctions for violations of this Order.

II. DEFINITIONS

Unless otherwise expressly provided herein, terms used in this Order which are defined in RCRA or in regulations promulgated under RCRA shall have the meaning assigned to them under RCRA or in such regulations.

1. Acceptable, in the phrase "In a manner acceptable to EPA..." shall mean that submittals or completed work meet the terms and conditions of this Order, attachments, scopes of work, approved workplans and/or EPA's written comments consistent with applicable guidance documents.

2. Additional work shall mean any activity or requirement that is not expressly covered by this Order or its attachments but is determined by EPA pursuant to applicable statutory authority to be necessary to fulfill the purposes of this Order as presented in Section III herein.

3. Administrative Record shall mean the record compiled and maintained by EPA relative to this Order.

4. Area of Concern shall mean any area of the facility under the control or ownership of the owner or operator where a release to the environment of hazardous waste(s) or hazardous constituents has occurred, is suspected to have occurred, or may occur, regardless of the frequency or duration of the release.

5. CERCLA shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§9601, et seq.

6. Chemicals of Potential Concern shall mean the chemicals that are potentially related to operations at the facility.

7. Closure Plan shall mean the plan submitted by Respondent and Chamberlain Manufacturing Corporation and required by the Administrative Order on Consent, Docket No. 87-H-0022, which

sets forth action necessary to close the surface impoundments at the facility.

8. Comply or compliance may be used interchangeably and shall mean completion of work required by this Order of a quality approvable by EPA and in the manner and time specified in this Order or any modification thereof, its attachments or any modification thereof, or applicable written EPA directives. The Respondent must meet both the quality and timeliness components of a particular requirement to be considered to be in compliance with the terms and conditions of this Order.

8. Contractor shall include any subcontractor, consultant or laboratory retained to conduct or monitor any portion of the work performed pursuant to this Order.

9. Corrective Measure shall mean those measures or actions required by law to control, prevent or mitigate the release or potential release of hazardous waste or hazardous constituents into the environment.

10. Corrective Measures Study or CMS shall mean the investigation and evaluation of potential remedial alternatives for any releases or potential releases at the facility identified during the RFI, as defined herein.

The CMS requirements are detailed in the CMS Scope of Work included as Attachment 3.

12. Data Quality Objectives shall mean the qualitative or quantitative statements, the application of which is designed to ensure that data of known and appropriate quality are obtained.

13. Day shall mean a calendar day unless expressly stated to be a business day. Business day shall mean a day other than a Saturday, Sunday, or federal holiday. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or federal holiday, the period shall run until the end of the next business day.

14. EPA or U.S. EPA shall mean the United States Environmental Protection Agency, and any successor departments or agencies of the United States.

15. Facility shall mean the manufacturing facility located at 2005 South 19th Street, Clinton, Iowa, depicted in Attachment 1, attached to and incorporated in this Order and all contiguous property under the control of Respondent.

16. Hazardous Constituents shall mean any constituent identified in Appendix VIII to 40 C.F.R. Part 261 or Appendix IX to 40 C.F.R. Part 264.

17. Hazardous Waste shall mean hazardous waste as defined in §1004(5) of RCRA or 40 C.F.R. §260.10. This term includes hazardous constituents as defined above.

18. Innovative Treatment Technologies shall mean those technologies for treatment of soil, sediment, sludge, and debris other than incineration or solidification/ stabilization and those technologies for treatment of groundwater contamination that are alternatives to pump and treat.

19. Interim measures or IM shall mean those actions, which can be initiated in advance of implementation of the final corrective action for a facility, which are necessary to mitigate actual or potential threats and prevent imminent threats to human health and the environment from being realized while a long-term, comprehensive response can be developed.

20. Receptors shall mean those humans, animals, or plants and their habitats which are or may receive or be affected by

releases of hazardous waste or hazardous constituents from the facility.

21. RCRA Facility Investigation or RFI shall mean the investigation and characterization of any source(s) of contamination and the nature, extent, direction, rate, movement, and concentration of any source(s) of contamination and/or any releases of hazardous waste, including hazardous constituents, that have been or are likely to be released into the environment from the facility. The activities required for the RFI are detailed in the RFI Scope of Work included as Attachment 2.

22. Solid Waste Management Unit or SWMU shall mean any discernible unit at which solid wastes have been placed at any time irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility where solid wastes have been routinely and systematically released.

23. Scope of Work or SOW shall mean the outline of work Respondent must use to develop all workplans and reports required by this Order as set forth in this Order and its Attachments 2 and 3. All SOW Attachments and modifications or amendments thereto are incorporated into this Order and enforceable as part of this Order.

24. Submittal shall include any workplan, report, progress report, or any other written document Respondent is required by this Order to send to EPA.

25. Work or Obligation shall mean any activity required of Respondent by this Order and its attachments.

26. Workplan shall mean the detailed plans prepared by Respondent to satisfy the requirements of the corresponding Scope of Work. The requirements for each workplan are presented in Section IX herein and Attachments 2 and 3.

III. STATEMENT OF PURPOSE

1. EPA has drawn two conclusions based on its review of the documentation submitted to support implementation of the closure plan. First, EPA has concluded that the closure plan has not been fully implemented. Second, EPA has concluded that data generated by partial implementation of the closure plan indicates that there have been releases from the surface impoundments.

2. In entering into this Order, the mutual objectives of EPA and Respondent are: (1) to complete the work set forth in the closure plan including, (a) to the extent necessary, the performance of Interim Measures at the facility to relieve threats to human health and the environment, as a result of releases or potential releases of hazardous wastes or hazardous

constituents from the facility; (b) to update the October 28, 1988 RCRA Facility Assessment Report to determine fully the nature and extent of any release of hazardous waste and hazardous constituents at or from the facility; (c) to perform a Corrective Measures Study to identify and evaluate alternatives for the corrective measures necessary to prevent migration or release of the hazardous wastes or hazardous constituents referenced in the closure plan; and (2) to perform any other activities that EPA, pursuant to statutory authority, determines are necessary to evaluate actual or potential threats to human health and the environment resulting from the release or potential release of hazardous waste or hazardous constituents at or from the facility.

IV. PARTIES BOUND

1. This Order shall apply to and be binding upon EPA, Respondent and its officers, directors, employees, agents, successors and assigns, heirs, trustees, receivers, and upon all persons, including but not limited to contractors and consultants, acting on behalf of Respondent in connection with the Order.

2. No change in ownership or corporate status relating to the facility will in any way alter Respondent's responsibility under this Order. Any conveyance of title, easement, or other interest in the Respondent's facility, or a portion of the Respondent's facility, shall not affect Respondent's obligations under this

Order. Respondent will be responsible for and liable for any failure to carry out all activities required of Respondent by the terms and conditions of the Order, regardless of Respondent's use of employees, agents, contractors, or consultants to perform any such tasks; provided, however, in the event that Respondent's interest in the facility is transferred, Respondent may be released from its obligations under this Order if the transferee substitutes itself for Respondent into this Consent Order and obligates itself for all liabilities hereunder by entering into a Consent Order with EPA and demonstrates to EPA that it is capable of conducting the work required hereunder and conducting corrective measures.

3. For work initiated after the effective date of this Order, Respondent shall provide a copy of this Order to all contractors retained to conduct or monitor any portion of the work performed pursuant to this Order within fourteen (14) days of the issuance of this Order or the retention of such person(s), whichever occurs later, and shall condition all such contracts with contractors retained to conduct or monitor any portion of the work being performed pursuant to this Order on compliance with the terms of this Order.

4. Respondent shall give written notice of this Order to any successor in interest to Collis Inc. prior to transfer of

ownership or operation of the facility or any portion thereof and shall notify EPA within thirty (30) days prior to any such transfer.

V. RESPONDENT'S DISCLAIMERS

1. Subject to the provisions of this Section, Respondent agrees to undertake all actions required by the terms and conditions of this Order, including any portions of this Order incorporated by reference. Except for its consent to jurisdiction, in any proceeding by EPA to enforce this Order, said consent shall not constitute an admission by Respondent of any legal or factual findings or matters set forth in this Order, except as otherwise expressly provided herein. Except as expressly provided in this Order, Respondent does not admit, accept, acknowledge or waive any defenses to any liability or fault with respect to the conditions at or arising from the facility. Respondent agrees, however, not to contest the validity or terms of this Order in any action brought by the United States on behalf of EPA to enforce this Order.

2. Respondent waives any rights to request a hearing on this matter pursuant to §3008(b) of RCRA and 40 C.F.R. Part 24, and consents to the issuance of this Order without a hearing pursuant to §3008(b) of RCRA as a Consent Order issued pursuant to §3008(h) of RCRA. Respondent, however, expressly reserves the right to contest any determination by EPA that any action taken

pursuant to this Order is incomplete, inadequate or not completed within the time limits established. In addition, Respondent reserves the right to dispute any findings of fact and conclusions of law set forth in this Order in any hearing or proceeding.

3. This Order is not to be construed and will not be construed to any extent or for any purposes, however and whenever arising, as an admission of liability or violation of any private contract or instrument or of any local, state or federal ordinance, rule, regulation or statute, directly or indirectly, on the part of Respondent. This Order shall not be admitted into evidence or used in any way, directly or indirectly, in any civil or criminal judicial or administrative proceeding against Respondent for any purpose other than by EPA to enforce the terms of this Order; provided, however, that nothing in this Order shall preclude Respondent from using this Order or the fact of its entry in defense of any suit or in any other proceeding against a party other than the United States.

VI. FINDINGS OF FACT

1. Respondent is a Delaware corporation with its principal place of business in Clinton, Iowa.

2. Respondent is the current owner and operator of a facility located at 2005 South 19th Street, Clinton, Iowa where it

manufactures shelving, baskets and accessories for refrigeration equipment. Respondent employs metal finishing techniques that include zinc plating, chromium conversion coating, lacquer dip and baking and epoxy coating. The wastewater treatment process used in the manufacturing process produces sludges that are not hazardous by characteristic. Prior to December 1985, when Respondent eliminated the use of cyanide plating in the manufacturing process, the wastewater treatment process produced sludge containing cyanide.

3. Chamberlain Manufacturing Corporation ("Chamberlain") is the former owner of the facility. Chamberlain owned and operated the facility as a hazardous waste management facility on or after November 19, 1980 and was therefore subject to interim status requirements set forth in 40 C.F.R. Part 265. During its ownership and operation, Chamberlain mainly used a cyanide plating process to finish its products.

4. Respondent has engaged in treatment, storage, and disposal of hazardous wastes at the facility and is subject to interim status requirements set forth in 40 C.F.R. Part 265. Prior to 1980, Chamberlain disposed of hazardous wastes in surface impoundments. Respondent treated and stored hazardous wastes in tanks at the facility prior to the elimination of cyanide plating in 1985.

5. On or about June 25, 1980, Chamberlain submitted to EPA a Notification of Hazardous Waste Activity. Chamberlain indicated that it generated, transported, and stored or disposed of hazardous wastes from non-specific sources identified in 40 C.F.R. §261.31 as F006, F007, F008, F009, and from off-specification products identified in 40 C.F.R. §261.33 as P106.

6. On or about November 13, 1980, Chamberlain submitted to EPA its Part A hazardous waste permit application pursuant to §3005(e) of RCRA and identified the hazardous wastes generated at the facility as commercial chemical products, manufacturing chemical intermediates, off-specification compound chemical products or manufacturing chemical intermediates identified at 40 C.F.R. §261.33(e) (P030,P121). Chamberlain also named hazardous wastes exhibiting the characteristic of toxicity, identified at 40 C.F.R. §261.24 (D007).

7. On or about March 16, 1982, Chamberlain submitted to EPA a revised Part A permit application naming its hazardous waste as hazardous wastes from non-specific sources identified at 40 C.F.R. §261.31 (F006, F008 and F009).

8. On January 24, 1983, Chamberlain entered into an Administrative Order on Consent ("1983 AOC") with EPA, Docket No. 81-H-017, under which the Collis division of Chamberlain would perform a two-phase environmental monitoring program. Pursuant

to Phase I, Chamberlain submitted a plan for hydrogeological investigation, monitoring and analysis, which included soil borings, shallow groundwater monitoring wells and groundwater sampling, surface water sampling, sampling from Manufacturer's Ditch, and a hydrogeologic assessment. Under terms of the 1983 AOC, the scope of work for Phase II depended upon the results of the hydrogeologic assessment performed during Phase I.

9. On or about May 29, 1984, Respondent submitted to EPA a revised Part A permit application to show a change of ownership from Chamberlain to Collis Inc. This application identified the hazardous wastes as the same as those which Chamberlain had previously identified, as described in Paragraph 6 above.

10. The Clinton Facility

10.1 The facility, depicted in Attachment 1, is located in Clinton, Iowa approximately two miles northwest of the Mississippi River on a 12.5 acre site. The facility is bounded to the north by a railroad track right-of-way, Manufacturer's Ditch and an uncultivated field with a steel building occupied by a small trucking company. South 19th Street bounds the facility property to the west beyond which lie both forested and cultivated areas. The facility abuts a small residential development to the south and the Clinton Country Club golf course to the east.

10.2 The facility has the following solid waste management units ("SWMUs") which can be located on Attachment 1, with the exception of the SWMU described in Paragraph 10.2.1 of this Section. All of the following SWMUs have been used at times to manage hazardous wastes produced by Respondent's and Chamberlain's manufacturing activities.

10.2.1 **Floor Drains, Sump and Overhead Pipe System**

During Chamberlain's ownership of the facility, the floor drains consisted of a series of concrete troughs covered with steel grates, which were connected to an underground plumbing system leading to the wastewater treatment plant ("WWTP"). In 1986, Respondent installed a piping system, which uses a series of floor drains, sumps and overhead pipes to transfer waste solutions from zinc plating and powder coating processes to the WWTP. Prior to 1992, when the kolene salt processes were eliminated, this piping system also transferred waste solutions containing kolene salt to the WWTP.

10.2.2 **Pollution Control Building and Immediate Area**

Within the pollution control operations at the facility, Respondent and Chamberlain have used the following tanks:

10.2.2.1 Chromate Treatment Tanks

Respondent's WWTP currently has three treatment tanks dedicated to the treatment of chromate solution. During the period from 1973 to 1985, two of the tanks were used by Respondent and Chamberlain to treat wastewater from the cyanide plating process.

10.2.2.2 Spent Acid Tank

Waste acid solutions from Respondent's and Chamberlain's processes were pumped to the spent acid tank and subsequently neutralized. Although this tank showed signs of leakage around the valve area in 1988, leakage appeared to be contained within the retaining wall surrounding the tank and no leakage to the ground was detected. The spent acid tank is located just outside the pollution control building.

10.2.2.3 Kolene Salt Tank

The 100 gallon kolene salt tank was used to dissolve spent kolene salt bricks from the kolene salt process prior to use in the neutralization tank. In 1992, the use of kolene salt at the facility was eliminated.

10.2.2.4 Neutralization Tank

The neutralization tank is used to neutralize wastes from Respondent's processes.

10.2.3 **Sludge Management Area**

The settling basin, the filter house and a temporary storage tank were used by Chamberlain and are used by Respondent to manage sludge resulting from the WWTP.

10.2.3.1 Settling Basin

The settling basin receives wastewaters from Respondent's neutralization tank. The settling basin was used for the same purposes during Chamberlain's ownership and operation of the facility.

10.2.3.2 Temporary Storage Tank

The temporary storage tank occasionally is used to hold sludges from the settling basin during periods when the settling basin undergoes maintenance.

10.2.3.3 Filter House

The unit contains equipment used to dewater sludges. A conveyor transfers dewatered sludge from the filter press to a temporary storage bin.

10.2.4 **Sludge Impoundments**

Chamberlain used the sludge impoundments to dispose of process sludges. Hazardous constituents remained in the sludge impoundments until excavation in 1988.

10.2.5 **Spent Chromic Acid Tank**

The spent chromic acid tank was used to store waste chromic acid, but subsequently has been cleaned and removed.

10.2.6 **Closure Pretreatment Area**

Three (3) 27-foot diameter tanks used by Respondent's and Chamberlain's contractor, Warzyn Engineering, Inc. ("Warzyn"), to treat contaminated water generated during closure of the sludge impoundments, were situated in the northwest corner of the facility. Warzyn removed these units from the facility in 1989.

10.2.7 **Northeast Yard/Receiving Dock Outdoor Storage Area**

Prior to 1985, the northeast yard was used to store over 200 drums containing zinc cyanide plating wastes. Chamberlain also used this area to store oily metal shavings. Prior to 1986, the

receiving dock was used to store 55 gallon drums containing electroplating waste.

10.2.8 **Manufacturer's Ditch**

The Manufacturer's Ditch received effluent from the Respondent's and Chamberlain's WWTP through permitted discharges. Prior to 1984, when Chamberlain owned and operated the facility, sludges from the WWTP on occasion entered the ditch through overtopping or discharges from the settling basin or sludge impoundments.

10.3 Chamberlain constructed five surface impoundments depicted in Attachment 1 and used them to dispose of sludge produced by the facility's nickel-chrome and zinc electroplating processes between 1970 and 1979. Pursuant to an Administrative Order on Consent that Respondent and Chamberlain entered into with EPA, Docket No. 87-H-0022, effective December 31, 1987 ("1987 AOC"), Respondent and Chamberlain removed sludge from the impoundments during 1987 and 1988 and covered them with fill dirt.

10.4 Depths to bedrock at the facility range from six to 118 feet. The unconsolidated overburden at the facility consists primarily of alternating layers of clayey silt interbedded with varying thicknesses of fine to coarse sand or silty sand. Across the northern half of the facility where the impoundments were located, fill material, consisting of silt with varying amounts of clay, organic matter, cinders, bricks, and gravel, occurs at ground surface and continues to depths ranging from 5 to 12 feet.

10.5 Shallow groundwater has been encountered in borings completed at the facility at the depth of 2.5 feet to 14.3 feet. The direction of groundwater flow in the unconfined shallow aquifer is generally northwest across the facility toward Manufacturer's Ditch. The Manufacturer's Ditch flows into Mill Creek. Mill Creek flows into Beaver Slough which is a tributary to the Mississippi River.

11. Documentation of Release

11.1 The Iowa Department of Environmental Quality ("IDEQ") inspected the facility on February 26, 1980, and April 7, 1980.

11.1.1 On February 26, 1980, IDEQ collected sediment samples from the facility area. Results of the sampling, expressed in milligrams per liter, revealed the following:

Location	Total Chromium	Hexavalent Chromium	Zinc	Lead	Cyanide
Sludge storage container leakage	140	3.0	58	0.26	
Yard drainage into Mill Creek	12	2.0	7.2	0.12	
Street runoff to storm sewer	45	27	4.2	0.86	
Reported storm drain under lagoons	0.28		0.64	0.02	
Downstream sediment sample	5500	8.0	2900	4.4	1800

11.1.2 On April 7, 1980, IDEQ collected sediment samples from various points at Manufacturer's Ditch. The results, expressed in part per million, indicate the following:

Constituent	Upstream	Near plant discharge	120 feet downstream	400-500 feet downstream
Chromium	190	26,000	38,000	29,000
Lead	59	49	99	110
Nickel	42	170	170	210
Zinc	1100	29,000	51,000	43,000
Hexavalent Chromium	1	6	5	14
Cyanide	29	1900	2800	2600

11.2 Chamberlain collected groundwater samples at the facility in 1983 and analyzed these samples. Results of analyses indicated the presence of cyanide, zinc, chromium, cadmium, nickel, and lead at levels as high as 7.7 mg/l, 3.1 mg/l, 49 mg/l, .0046 mg/l, 1.1 mg/l, and .046 mg/l, respectively.

11.3 On May 11, 1984, Chamberlain collected groundwater samples from monitoring well 2, depicted on Attachment 1. Analyses of these samples identified the presence of four halogenated hydrocarbons. Specifically, Chamberlain's analyses, expressed in micrograms per liter, revealed the following:

Constituent	Concentration
Methylene chloride	3.6
Trichloroethylene	150
Dichlorodifluoromethane	110
1,2-Dichloroethylene	1300

11.4 EPA photographed the facility on September 18, 1984. These photographs show a large stained area of soil which runs along the north face of the building.

11.5 On or about March 24, 1987, Respondent and Chamberlain provided EPA the analytical results of soil samples collected at the facility which indicated the presence of hazardous constituents that included polychlorinated biphenyls, which were found at levels as high as 23,300 micrograms per kilogram.

11.6 In July 1987, Respondent and Chamberlain provided EPA analyses of soil samples that had been collected between December 16 and 18, 1986 and on January 23, 1987 (prior to and during removal of soils from the surface impoundments), just beyond the perimeter of the impoundment field. The results of Respondent and Chamberlain's analyses indicated that every soil sample from the impoundment area prior to and during removal of soils contained detectable amounts of cyanide. Chromium, zinc, and cyanide were found at levels as high as 14,730 mg/kg, 21,020 mg/kg, and 452 mg/kg, respectively.

11.7 In compliance with the 1987 AOC, Respondent and Chamberlain collected soil samples around the perimeter of the surface impoundments as part of the closure process. In February 1990, Respondent and Chamberlain provided EPA the analytical results of composite soil samples collected on February 3 and 4, 1988, just beyond the perimeter of the impoundment field. All of the composite soil samples contained detectable amounts of chromium and nickel. Chromium and nickel were found at levels as high as 1270 mg/kg and 414 mg/kg, respectively.

11.8 EPA performed a comprehensive groundwater monitoring evaluation and published its results in a report dated December 7, 1988. EPA concluded that Respondent and Chamberlain's groundwater monitoring system did not meet the requirements of 40 C.F.R. §265.91.

12. Closure of Surface Impoundments

12.1 Warzyn, on behalf of Respondent and Chamberlain, began preparing the surface impoundments for closure on November 4, 1986, and completed its preparation on November 14, 1986. Warzyn's initial phase of sludge removal occurred from November 14, 1986 through February 18, 1987. Demobilization of the initial phase of sludge removal occurred on February 21, 1987. A total of 488 truckloads of waste, or approximately 10,630 tons, was transported from the site during the impoundment closure.

12.2 During February and March 1988, Warzyn performed certain tasks relating to closure that it described in a punch list submitted to EPA on January 6, 1988. Warzyn remobilized at the impoundment site on August 29, 1988, to continue sludge removal, which occurred from February 10 through March 17, 1989. Backfill material was placed during September 1988 and March 1989. Final grading and seeding was completed on May 15, 1989.

12.3 On May 12, 1988, Warzyn collected five surface water samples from Manufacturer's Ditch and analyzed for chromium, cadmium, nickel and cyanide. Sample locations included one upgradient, one downgradient and three adjacent to the impoundments. On February 3 and 4, 1988, Warzyn collected nine soil samples from borings along the southwest, east and south portions of the impoundment areas.

12.4 To implement the approved groundwater monitoring plan for the closure of the surface impoundments, Warzyn installed three monitoring wells (MW-20, MW-21 and MW-22) between February 2 and 4, 1988. An existing monitoring well, MW-13 was used as the fourth monitoring point required for the groundwater monitoring plan. Soil samples were collected at 2.5 foot intervals during the drilling of the monitoring wells. Warzyn collected groundwater samples on March 18, April 13, May 12, June 9, August 10 and October 20, 1988; and January 9, March 31 and September 27, 1989. The results of sampling referenced in this Paragraph and in Paragraph 12.3 above are contained in Warzyn's February 1990 Surface Impoundment Closure Report.

13. Hazardous constituents identified in this Paragraph and Paragraph 11 herein may pose a threat to human health and the environment.

13.1 Chromium has been classified by EPA as a known human carcinogen. Exposure to chromium may impair the respiratory system and cause fibrosis of the lungs.

13.2 Nickel has been classified by EPA as a systemic toxicant. Exposure to nickel may impair the nasal cavities, lungs, and cause skin irritation.

13.3 Cyanide has been classified by EPA as a systemic toxicant. Exposure to cyanide may impair the liver, kidneys and cause skin irritation.

13.4 Trichloroethylene has been classified by EPA as a probable human carcinogen. Exposure to trichloroethylene may impair the respiratory system, heart, liver, kidneys and cause skin irritation.

14. Without further study to evaluate alternatives necessary to prevent migration and possibly Interim Measures, hazardous constituents may further migrate from the facility into the environment by leaching into groundwaters, leaching into surface water runoff and movement of these waters into pathways of surface water drainage or adjacent uncontaminated groundwater. Releases from the facility may migrate toward the residential area and/or nearby cultivated land.

VII. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the foregoing findings of fact and after consideration of the Administrative Record, the Regional Administrator of EPA Region 7 has made the following conclusions of law and determinations:

1. Respondent is a person within the meaning of §1004(15) of RCRA.

2. Respondent is the owner and operator of a facility that has operated and is operating under interim status subject to §3005(e) of RCRA.

3. Certain wastes and constituents found at the facility, such as zinc, nickel, chromium, lead and cyanide, are hazardous wastes and/or hazardous constituents pursuant to §§1004(5) and 3001 of RCRA; 40 C.F.R. Part 261; and, Subpart S, §264.501, 55 Fed. Reg. 30874, July 27, 1990.

4. There is or has been a release of hazardous wastes or hazardous constituents into the environment from Respondent's facility.

5. The actions required by this Order are necessary to protect human health and the environment.

VIII. PROJECT COORDINATOR

1. Within ten (10) days of the effective date of this Order, Respondent shall designate a Project Coordinator and shall notify EPA in writing of the Project Coordinator it has selected. Each Project Coordinator shall be responsible for overseeing the implementation of this Order and for designating a person to act in his/her absence. The EPA Project Coordinator is:

Donald Bahnke
U. S. Environmental Protection Agency
RCRA Branch
726 Minnesota Avenue
Kansas City, Kansas 66101

The EPA Project Coordinator will be EPA's designated representative for the facility. The Respondent's Project Coordinator will be Respondent's designated representative for purposes of this Order and any certification made in compliance with Section XV herein. To the maximum extent practicable, all communications between Respondent and EPA, and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to this Order shall be directed through the Project Coordinators.

2. The parties may change their Project Coordinator but agree to provide, if possible, at least ten (10) days written notice prior to changing a Project Coordinator.

3. The absence of the EPA Project Coordinator from the facility shall not be cause for the stoppage of work.

IX. WORK TO BE PERFORMED

Pursuant to §3008(h) of RCRA, Respondent hereby agrees to perform the acts specified in this Section, in the manner and by the dates specified herein. All work undertaken pursuant to this Order shall be performed in a manner consistent with, at a minimum: the Scope of Work for the RFI and the CMS, attached hereto and incorporated herein as Attachment 2 and 3 respectively; the EPA-approved IM Workplan, RFI Workplan, CMS Workplan, and all other Workplans; RCRA and other applicable Federal laws and their implementing regulations; and applicable EPA guidance documents. Guidance may include, but is not limited to, documents listed in Attachment 4 to this Order, which is incorporated by reference.

A. IM / STABILIZATION

1. Respondent shall evaluate available data and assess the need for IM. IM shall be used whenever necessary to achieve the goal of stabilization in the event that contamination at the facility poses an imminent threat to human health and/or the environment. Respondent shall submit a Current Conditions Report to EPA in accordance with Part B of this Section. The Current Conditions Report shall contain an assessment of previously implemented IM and the incomplete closure of the surface impoundments and any

other SWMUs by Respondent pursuant to the 1987 AOC. The assessment must evaluate other IM alternatives that could be implemented at the facility and identify any new data needed for making decisions on stabilization. EPA shall determine when this data or information shall be collected. EPA will review Respondent's data and assessment as well as other information available to EPA, and select, if any, an appropriate IM for implementation by Respondent. If appropriate, such selection may be deferred until additional data is collected.

2. In the event Respondent identifies an immediate or potential threat to human health or the environment, Respondent shall notify the EPA Project Coordinator, orally within forty-eight (48) hours of discovery and notify EPA in writing within five (5) days of such discovery summarizing the immediacy and magnitude of the potential threat(s) to human health and/or the environment. Upon written request of EPA, Respondent shall submit to EPA an IM Workplan which shall be subject to EPA approval. If EPA determines that immediate action is required, the EPA Project Coordinator may orally authorize Respondent to act prior to EPA's receipt of the IM Workplan. The EPA Project Coordinator will provide Respondent with written confirmation of the oral authorization within three (3) days of this authorization.

3. If EPA identifies an immediate or potential threat to human health and/or the environment, EPA will notify Respondent in

writing. Within ten (10) days of receiving EPA's written notification, Respondent shall submit to EPA an IM Workplan, subject to EPA approval, that identifies interim measures which will mitigate the threat. If EPA determines that immediate action is required, the EPA Project Coordinator may orally require Respondent to act prior to Respondent's receipt of EPA's written notification.

4. All IM Workplans shall ensure that the IM are designed to mitigate immediate or potential threat(s) to human health and/or the environment, and should be consistent with the objectives of, and contribute to the performance of any long-term remedy which may be required at the facility.

5. The IM Workplan shall include, if determined applicable by EPA, the following sections:

- IM Objectives
- Public Involvement Plan
- Data Collection Quality Assurance/Data Management
- Design Plans and Specifications
- Operation and Maintenance
- Project Schedule
- IM Construction Quality Assurance
- Reporting Requirements.

6. Concurrent with the submission of an IM Workplan, Respondent shall submit to EPA a Health and Safety Plan in accordance with Attachment 2 of this Order.

B. RFI

1. Within seventy-five (75) days after the effective date of this Order, Respondent shall submit to EPA a Draft RFI Workplan, a Current Conditions Report, and include a Pre-Investigation Evaluation of Corrective Measure Technologies Report. The RFI Workplan, Current Conditions Report, and the Pre-Investigation Evaluation of Corrective Measure Technologies Report are subject to approval by EPA and shall be developed in a manner consistent with tasks I, II, III and IV of the RFI Scope of Work contained in Attachment 2. Respondent shall submit the Final RFI Workplan within forty-five (45) days after receipt of EPA's comments on the Draft RFI Workplan.

2. Concurrent with the submission of a Draft RFI Workplan, Respondent shall submit to EPA a Health and Safety Plan in accordance with Attachment 2 of this Order. If workplans for both an IM and RFI are required by this Order, Respondent may submit a single Health and Safety Plan that addresses the combined IM and RFI activities.

3. Respondent shall submit a Draft RFI Report to EPA within ninety (90) days after receipt of EPA's approval of the RFI Workplan. The report shall be developed in a manner consistent with tasks IV, V, VI and VII of Attachment 2. EPA will review the Draft RFI Report and notify Respondent of EPA's response in accordance with Section X of this Order. Respondent shall submit

the Final RFI Report within thirty (30) days after receipt of EPA's comments on the Draft RFI Report.

C. CMS

1. Within thirty (30) days after receipt of EPA's approval of the Final RFI Report, Respondent shall submit a Draft CMS Workplan to EPA. The CMS Workplan is subject to approval by EPA and shall be developed in a manner consistent with the CMS Scope of Work contained in Attachment 3 of this Order. Respondent shall submit a Final CMS Workplan within thirty (30) days after receipt of EPA's comments on the Draft CMS Workplan.

2. Respondent shall prepare treatability studies for all potential corrective measures that involve treatment except where Respondent can demonstrate to EPA's satisfaction that they are not needed. The CMS Workplan shall include, at a minimum, a summary of the proposed treatability study and conceptual design, and a schedule for submitting the treatability study workplan or Respondent's justification for not proposing a treatability study.

3. Respondent shall submit a Draft CMS Report within thirty (30) days after Respondent's submittal of the Final RFI Report. The report shall be developed in a manner consistent with tasks VIII, IX, X, and XI of Attachment 3. EPA will review the CMS Report and notify Respondent in writing of EPA's response in accordance

with Section X of this Order. Respondent shall submit a Final CMS Report within thirty (30) days after receipt of EPA's comments on the Draft CMS Report.

4. In accordance with Section X herein, EPA will provide the public with an opportunity to submit written and/or oral comments and an opportunity for a public meeting regarding EPA's proposed cleanup standards and remedy for the facility.

D. Corrective Measures Implementation

After selection by EPA of the corrective measure(s), EPA shall provide a sixty (60) day period of negotiation of an Administrative Order on Consent for implementation of such corrective measure(s). If agreement is not reached during this period, EPA reserves all rights it has to implement the corrective measures(s) or other remedial response or to take any other appropriate action under RCRA, CERCLA, or any other available legal authority, including issuance of a Unilateral Administrative Order or the filing of a civil action seeking a judicial order directing Respondent to implement the selected corrective measure(s). Nothing in this provision shall limit EPA's authority to require that the selected corrective measures be implemented.

X. PUBLIC PARTICIPATION AND COMMENT IN CORRECTIVE MEASURE(S) SELECTION

1. Upon approval by EPA of the Corrective Measure Study Final Report, EPA shall make the RCRA Facility Investigation Final Report (or summary of report), the Corrective Measure Study Final Report (or summary of Report), a summary of EPA's proposed selection of that corrective measure(s) available to the public for review and comment for thirty (30) days.

2. Following the public review and comment period, EPA will notify Respondent of the corrective measure(s) selected by EPA. If the corrective measure(s) recommended in the Corrective Measures Study Report is not the corrective measure(s) selected by EPA after consideration of public comments, EPA will inform Respondent in writing of the reasons for such decision.

XI. AGENCY APPROVALS/SUBMITTALS/PROPOSED CONTRACTOR/ ADDITIONAL WORK

A. EPA APPROVALS

1. EPA will provide Respondent with its written approval, approval with conditions, disapproval, or disapproval with comments and/or modifications for any workplan, report (except progress reports), specification, or schedule submitted pursuant to or required by this Order. In the event that EPA responds to a submittal more than one hundred eighty (180) days after it is

received by EPA, any deadline activated by EPA's response shall be extended by twenty-one (21) days.

2. Respondent shall revise any workplan, report, specification, or schedule in accordance with EPA's written comments. Respondent shall submit to EPA any revised submittals in accordance with the due date specified by EPA. Revised submittals are subject to EPA approval, approval with conditions, disapproval, or disapproval with comments and/or modifications.

3. Upon receipt of EPA's written approval, Respondent shall commence work and implement any approved workplan in accordance with the schedule and provisions contained therein.

4. Any EPA-approved report, workplan, specification, or schedule shall be deemed incorporated into this Order. Prior to this written approval, no workplan, report, specification, or schedule shall be construed as approved and final unless otherwise provided in this Order. Oral advice, suggestions, or comments given by EPA representatives will not constitute an official approval, nor will oral assurance of approval be considered binding.

B. SUBMITTALS

1. Beginning with the first full month following the effective date of this Order, and throughout the period that this Order is

effective, Respondent shall provide EPA with monthly progress reports. Progress reports are due the tenth day of each month beginning on the month after the effective date of this Order. The progress reports shall conform to requirements in the relevant scope of work contained in Attachments 2 and 3.

2. Three (3) copies of all documents required to be submitted pursuant to this Order shall be hand delivered, sent by certified mail, return receipt requested, or by overnight express mail to the Project Coordinator or to other addressees she/he designates.

C. PROPOSED CONTRACTOR

All work performed pursuant to this Order shall be under the direction and supervision of a professional engineer, hydrologist, geologist, or environmental scientist or other qualified person acceptable to EPA with expertise in hazardous waste cleanup. Respondent's Contractor shall have the technical expertise sufficient to adequately perform all aspects of the work for which it is responsible. Within fourteen (14) days after the effective date of this Order, Respondent shall notify the EPA Project Coordinator in writing of the name, title, and qualifications of the engineer, hydrologist, geologist, or environmental scientist or other qualified person acceptable to EPA and of any contractors or consultants and their personnel to be used in carrying out the terms of this Order. EPA reserves the right to disapprove Respondent's Contractor and shall provide

to Respondent the reasonable basis for such disapproval in writing. If EPA disapproves a Contractor, Respondent must, within twenty (20) days of receipt from EPA of written notice of disapproval explaining the basis for such disapproval, notify EPA, in writing, of the name, title, and qualifications of any replacement. EPA's first disapproval shall not be subject to review under Section XVIII herein; however, any subsequent disapprovals of contractors by EPA will be subject to review under Section XVIII.

D. ADDITIONAL WORK

EPA may determine or Respondent may propose that certain tasks, including investigatory work, engineering evaluation, or procedure/methodology modifications, are necessary in addition to or in lieu of the tasks included in any EPA-approved workplan, when such additional work is necessary to meet the purposes set forth in Section III herein. EPA may determine that Respondent shall perform the additional work and EPA will specify in writing the reasonable basis for its determination that the additional work is necessary. Within fifteen (15) days after the receipt of the determination to perform additional work, Respondent shall have the opportunity to meet or confer with EPA to discuss the additional work. In the event that EPA and Respondent are unable to agree on the additional work requested by EPA, Respondent may invoke dispute resolution. If EPA prevails in the resolution of such dispute, Respondent shall submit for EPA approval a workplan

for the additional work within thirty (30) days after receipt of either EPA's determination that additional work is necessary, EPA's written Dispute Decision or according to an alternative schedule established by EPA. Upon approval of a workplan, Respondent shall implement the workplan in accordance with the schedule and provisions contained therein.

XII. QUALITY ASSURANCE

1. Respondent shall follow applicable EPA guidance for sampling and analysis. Workplans shall contain quality assurance/quality control and chain of custody procedures for all sampling, monitoring, and analytical activities. Any deviations from the approved workplans must be approved by EPA prior to implementation, must be documented, including reasons for the deviations, and must be reported in the applicable report (e.g., RFI).

2. The name(s), addresses, and telephone numbers of the analytical laboratories Respondent proposes to use must be specified in the applicable workplan(s).

3. All workplans required under this Order shall include data quality objectives for each data collection activity to ensure that data of known and appropriate quality are obtained and that data are sufficient to support their intended use(s).

4. Respondent shall follow applicable guidances to ensure that high quality data is obtained by its Contractor. Respondent shall make diligent, good faith efforts designed to ensure that laboratories used by Respondent for analysis perform such analysis according to the latest approved edition of "Test Methods for Evaluating Solid Waste, (SW-846)," or other methods deemed satisfactory to EPA. If methods other than EPA methods are to be used, Respondent shall specify all such protocols in the applicable workplan (e.g., RFI). EPA may reject any data that does not meet the requirements of the approved workplan or EPA analytical methods and may require resampling and additional analysis.

5. Respondent shall be responsible for the quality of the data to the extent that Respondent shall cause the laboratories used by Respondent for analysis to participate in a quality assurance/quality control program as set forth in "Test Methods for Evaluating Solid Waste, (SW-846)". EPA may conduct a performance and quality assurance/quality control audit of the laboratories chosen by Respondent before, during, or after sample analyses. Upon request by EPA, Respondent shall have its laboratory perform analyses of samples provided by EPA to demonstrate laboratory performance. If the audit reveals deficiencies in a laboratory's performance or quality assurance/quality control, EPA may require resampling and additional analysis.

XIII. SAMPLING AND DATA/DOCUMENT AVAILABILITY

1. Respondent shall submit to EPA upon request the results of all sampling and/or tests or other data relating to the facility generated by divisions, agents, consultants, or contractors pursuant to this Order.

2. Notwithstanding any other provisions of this Order, the United States retains all of its information gathering and inspection authorities and rights in addition to the rights reserved in Section XX and elsewhere in this Order.

3. Respondent shall notify EPA in writing at least thirty (30) days before engaging in any field activities, such as well drilling, installation of equipment, or sampling. If Respondent believes it must commence emergency field activities without delay, Respondent may seek emergency telephone authorization from the EPA Project Coordinator or, if the EPA Project Coordinator is unavailable, his/her Section Chief, to commence such activities immediately. At the request of EPA, Respondent shall provide or allow EPA or its authorized representative at EPA's own cost to take split or duplicate samples of all samples collected by Respondent pursuant to this Order. Similarly, at the request of Respondent, EPA shall provide or allow Respondent or its authorized representative(s), at Respondent's own cost, to take

split or duplicate samples of all samples collected by EPA under this Order.

4. Respondent may assert a business confidentiality claim covering all or part of any information submitted to EPA pursuant to this Order. Any assertion of confidentiality must be accompanied by information that satisfies the items listed in 40 C.F.R. §2.204(e)(4) or such claim shall be deemed waived. Information determined by EPA to be confidential shall be disclosed only to the extent permitted by 40 C.F.R. Part 2. If no such confidentiality claim accompanies the information when it is submitted to EPA, the information may be made available to the public by EPA without further notice to Respondent. Respondent agrees not to assert any confidentiality claim with regard to any physical or analytical data.

XIV. ACCESS

1. EPA, its contractors, employees, and/or any EPA representatives, upon showing appropriate credentials, are authorized during business hours and while work is being conducted under this Order to enter and move about the facility under escort (if Respondent so chooses) pursuant to this Order and in relation to the actions to be taken hereunder, for the purposes of, inter alia: interviewing facility personnel and contractors; inspecting records, operating logs, and contracts related to the facility; reviewing the progress of Respondent in carrying out the terms of

this Order; conducting such tests, sampling, or monitoring as EPA deems necessary; using a camera, sound recording, or other documentary type equipment; and verifying the reports and data submitted to EPA by Respondent. The Respondent agrees to provide EPA and its representatives access at all reasonable times to the facility and subject to paragraph two (2) below, to any other property to which access is required for implementation of this Order. In case of emergency, Respondent shall provide EPA and its representatives access at any time without an escort. Respondent shall permit such persons to inspect and copy all records, files, photographs, documents, including all sampling and monitoring data, that pertain to work undertaken pursuant to this Order and that are within the possession or under the control of Respondent or its Contractors; provided that nothing herein shall be construed as a waiver of the attorney-client privilege or the attorney work product privilege. However Respondent agrees not to assert such privilege with regard to physical or analytical data.

2. To the extent that work being performed pursuant to this Order must be done beyond the facility property boundary, Respondent shall use its best efforts to obtain access agreements necessary to complete work required by this Order from the present owner(s) of such property within thirty (30) days after approval of any workplan for which access is required. Best efforts as used in this paragraph shall include, at a minimum, a

certified letter from Respondent to the present owner(s) of such property requesting access agreement(s) to permit Respondent, EPA, and their authorized representatives to access such property, and the payment of reasonable sums of money in consideration of granting access. Any such access agreement shall provide for access by EPA and its representatives. Respondent shall insure that EPA's Project Coordinator has a copy of any access agreement(s). In the event that agreements for access are not obtained within thirty (30) days of approval of any workplan for which access is required, or of the date that the need for access became known to Respondent, Respondent shall notify EPA in writing within fourteen (14) days thereafter of both the efforts undertaken to obtain access and the failure to obtain such agreements. EPA may, at its discretion, assist Respondent in obtaining access. In the event EPA obtains access, Respondent shall undertake EPA-approved work on such property.

3. Respondent agrees to indemnify the United States as provided in Section XXIII herein, for any and all claims arising from activities on such property.

4. Nothing in this Section limits or otherwise affects EPA's right of access and entry pursuant to applicable law, including RCRA and CERCLA.

5. Nothing in this Section shall be construed to limit or otherwise affect Respondent's liability and obligation to perform corrective measures, including corrective measures beyond the facility boundary, notwithstanding the lack of access.

XV. RECORD PRESERVATION

1. Respondent shall retain, during the pendency of this Order and for a minimum of six (6) years after its termination, all data, records, and documents now in its possession or control or which come into its possession which relate in any way to this Order or to hazardous waste management and/or disposal at the facility. Respondent shall notify EPA in writing ninety (90) days prior to the destruction of any such records, and shall provide EPA with the opportunity to take possession of any such records. Such written notification shall reference the effective date, caption, and docket number of this Order and shall be addressed to:

David A. Wagoner, Director
Waste Management Division
U.S. EPA, Region 7
726 Minnesota Avenue
Kansas City, Kansas 66101

2. Respondent further agrees that within thirty (30) days of retaining or employing any agent, consultant, or contractor for the purpose of carrying out the terms of this Order, Respondent will enter into an agreement with any such agents, consultants, or contractors whereby such agents, consultants, and/or

contractors will be required to provide Respondent a copy of all documents produced pursuant to this Order.

3. All documents pertaining to this Order shall be stored by the Respondent in a centralized location at the facility to afford ease of access by EPA or its representatives.

XVI. NOTIFICATION AND DOCUMENT CERTIFICATION

Unless otherwise specified, all reports, correspondence, approvals, disapprovals, notices, or other submittals relating to or required under this Order shall be in writing and shall be sent to:

1. Three copies of all documents to be submitted to the EPA should be sent to:

   Donald Bahnke,
   RCRA/Iowa Section
   U.S. EPA Region 7
   726 Minnesota Avenue
   Kansas City, KS 66101

2. Documents to be submitted to the Respondent should be sent to:

   Robert J. Millman
   Heritage Remediation/
   Engineering, Inc.
   1319 Marquette Drive
   Romeoville, IL 60441-4054

   Michael A. Stick, Esquire
   Butler Rubin Saltarelli
   & Boyd
   Three First National Plaza
   Suite 1505
   Chicago, IL 60602

3. Any report or other document submitted by Respondent pursuant to this Order which makes any representation concerning Respondent's compliance or noncompliance with any requirement of this Order shall be certified by a responsible corporate officer

of Respondent. A responsible corporate officer means: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation.

4. The certification required by paragraph three (3) above, shall be in the following form:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature: _____

Name: _____

Title: _____

Date: _____

XVII. DELAY IN PERFORMANCE/STIPULATED PENALTIES

1. Unless there has been a written modification by EPA of a compliance date, a written modification by EPA of an approved

workplan condition, or excusable delay as defined in Section XIX herein, if Respondent fails to comply with any term or condition set forth in this Order in the time or manner specified herein, Respondent shall pay stipulated penalties as set forth below upon written demand from EPA. Prior to making a written demand for stipulated penalties, EPA, in its discretion, may discuss in good faith with Respondent its failure to comply.

a. For failure to commence, perform, and/or complete field work in a manner reasonably acceptable to EPA or at the time required pursuant to this Order: $800 per day for the first seven (7) days of such violation, $1500 per day for the eighth (8th) through twenty-first (21st) day of such violation, and $2,000 per day for each day of such violation, thereafter.

b. For failure to complete and submit any workplans or reports (other than progress reports) in a manner reasonably acceptable to EPA or at the time required pursuant to this Order: $1000 per day for the first seven (7) days of such violation, $1750 per day for the eighth (8th) through twenty-first (21st) day of such violation, and $2500 per day for each day of such violation, thereafter.

c. For failure to complete and submit other written submittals not included in Paragraph 1.b. of this Section in

a manner acceptable to EPA or at the time required pursuant to this Order: $500 per day for the first seven (7) days of such violation, $1250 per day for the eighth (8th) through twenty-first (21st) day of such violation, and $2000 per day for each day of such violation, thereafter.

d. For failure to comply with any other provisions of this Order in a manner acceptable to EPA: $500 per day for the first seven (7) days of such violation, $1250 per day for the eighth (8th) through twenty-first (21st) day of such violation, and $1750 per day for each day of such violation, thereafter.

2. Penalties shall begin to accrue on the day after the complete performance is due or the day an alleged violation occurs, and shall continue to accrue through the day of correction of the alleged violation. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this Order. Penalties shall continue to accrue regardless of whether EPA has notified the Respondent of a violation.

3. All penalties owed to the United States under this Section shall be due and payable within thirty (30) days of the Respondent's receipt from EPA of a written demand for payment of the penalties, unless Respondent invokes the dispute resolution procedures under Section XVIII of this Order. Such a written

demand will describe the alleged violation and will indicate the amount of penalties due.

4. Interest shall begin to accrue on any unpaid stipulated penalty balance beginning on the thirty-first (31st) day after Respondent's receipt of EPA's demand letter. Interest shall accrue at the Current Value of Funds Rate established by the U.S. Secretary of the Treasury. Pursuant to 31 U.S.C. §3717, an additional penalty of 6% per annum on any unpaid principal shall be assessed for any stipulated penalty payment which is overdue for ninety (90) or more days.

5. All penalties shall be made payable by certified or cashier's check to the United States of America and shall be remitted to:

U.S. Department of the Treasury
Attention: EPA Region 7, Office of the Comptroller
P.O. Box 360748M
Pittsburgh, PA 15251

All such checks shall reference Collis Inc., 2005 South 19th Street, Clinton, Iowa, and the EPA docket number of this action. Copies of all such checks and letters forwarding the checks shall be sent simultaneously to the EPA Project Coordinator.

6. Respondent may dispute EPA's determination of a violation and/or its assessment of stipulated penalties by invoking the dispute resolution procedures under Section XVIII herein. The stipulated penalties in dispute shall not continue to accrue

during the dispute resolution period unless the alleged violation is on-going during the dispute resolution process. In the event that the alleged violation is on-going at the time Respondent invokes the dispute resolution procedure, the stipulated penalties shall continue to accrue but need not be paid during the dispute resolution period until the violation ceases. Respondent shall pay stipulated penalties and interest, if any, in accordance with the dispute resolution decision and/or agreement. Respondent shall submit such payment to EPA within seven (7) days of receipt of such resolution in accordance with Paragraph 5 of this Section.

7. Neither the invocation of dispute resolution nor the payment of penalties shall alter in any way Respondent's obligation to comply with the terms and conditions of this Order.

8. The stipulated penalties set forth in this Section do not preclude EPA from pursuing any other remedies or sanctions which may be available to EPA by reason of Respondent's failure to comply with any of the terms and conditions of this Order. At EPA's discretion, EPA may choose either to pursue stipulated penalties set forth in this Section or to pursue any other remedies and sanctions that may be available to EPA by reason of Respondent's failure to comply with any of the terms and conditions of this Order.

9. No payments under this Section shall be tax deductible for Federal tax purposes.

XVIII. DISPUTE RESOLUTION

1. The parties shall use their best efforts to informally and in good faith resolve all disputes or differences of opinion. The parties agree that the procedures contained in this Section are the procedures for resolving disputes arising under this Order. However, this Dispute Resolution procedure shall not preclude any party from having direct recourse to a court if otherwise available by applicable law and consistent with Section XX herein.

2. If Respondent disagrees, in whole or in part, with any written decision (Initial Written Decision) by EPA pursuant to this Order, Respondent's Project Coordinator shall notify the EPA Project Coordinator of the dispute. The Project Coordinators shall in good faith attempt to resolve the dispute informally.

3. If the Project Coordinators cannot in good faith resolve the dispute informally, Respondent may pursue the matter formally by placing its objections in writing. Respondent's written objections must be directed to the EPA Project Coordinator. This written notice must be mailed to such person(s) within fourteen (14) days after Respondent's receipt of the Initial Written Decision. Respondent's written objection must set forth the

specific points of the dispute, the position Respondent claims should be adopted as consistent with the requirements of this Order, the basis for Respondent's position, and any matters which it considers necessary for EPA's determination. If Respondent fails to follow any of the requirements contained in this paragraph, then it shall have waived its right to further consideration of the disputed issue.

4. EPA and Respondent shall have fourteen (14) days after EPA's receipt of Respondent's written objections to attempt in good faith to resolve the dispute through formal negotiations. This time period may be extended by EPA for good cause. During such time period, Respondent may request and receive a conference with the Region 7 RCRA Branch Chief, or one acting on his/her behalf, to discuss the dispute and Respondent's objections. EPA agrees to confer in person or by telephone to resolve any such disagreement with the Respondent as long as Respondent's request for a conference will not extend the Negotiation Period, unless good cause is shown.

5. If the parties are unable in good faith to reach an agreement within the Negotiation Period, EPA shall provide to Respondent its written decision on the dispute (EPA Dispute Decision). Such decision shall be incorporated into and become an enforceable element of this Order.

6. Except as provided in Section XVII herein, the existence of a dispute as defined in this Section and EPA's consideration of matters placed into dispute shall not excuse, toll, or suspend any compliance obligation or deadline required pursuant to this Order during the pendency of the dispute resolution process unless a delay of more than thirty (30) days by EPA in issuing the EPA Dispute Decision causes a delay in Respondent's performance or compliance with the terms and conditions of this Order.

XIX. FORCE MAJEURE AND EXCUSABLE DELAY

1. Force majeure, for purposes of this Order, is defined as any event arising from causes not foreseen and beyond the control of Respondent or any person or entity controlled by Respondent, including but not limited to Respondent's contractors, that delays or prevents the timely performance of any obligation under this Order despite Respondent's best efforts to fulfill such obligation. The requirement that Respondent exercise "best efforts to fulfill such obligation" shall include, but not be limited to, best efforts to anticipate any potential force majeure and address it before, during, and after its occurrence, such that any delay or prevention of performance is minimized to the greatest extent possible. Force majeure does not include increased costs of the work to be performed under this Order or financial inability to complete the work.

2. If any event occurs or has occurred that may delay the performance of any obligation under this Order, whether or not caused by a force majeure, Respondent shall contact by telephone and communicate orally with EPA's Project Coordinator or, in his or her absence, EPA's alternative Project Coordinator or, in the event both of EPA's designated representatives are unavailable, the Director of the Hazardous Waste Management Division, EPA Region 7, within forty-eight (48) hours of when Respondent first knew or should have known that the event might cause a delay. Within five (5) days thereafter, Respondent shall provide to EPA in writing the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; all other obligations affected by the force majeure, and what measures, if any, taken or to be taken to minimize the effect of the event on those obligations; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondent's rationale for attributing such delay to a force majeure if it intends to assert such a claim; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health, welfare or the environment. Respondent shall include with any notice all available documentation supporting its claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of force majeure for that event. Respondent

shall be deemed to have notice of any circumstances of which its contractors had or should have had notice.

3. If EPA determines that the delay or anticipated delay is attributable to a force majeure, the time for performance of such obligation under this Order that is affected by the force majeure will be extended by EPA for such time as EPA determines is necessary to complete such obligation. An extension of the time for performance of such obligation affected by the force majeure shall not, of itself, extend the time for performance of any other obligation, unless Respondent can demonstrate that more than one obligation was affected by the force majeure. If EPA determines that the delay or anticipated delay has been or will be caused by a force majeure, EPA will notify Respondent in writing of the length of the extension, if any, for performance of such obligations affected by the force majeure.

4. If EPA disagrees with Respondent's assertion of a force majeure, Respondent may elect to invoke the dispute resolution provision, and shall follow the time frames set forth in Section XVIII: Dispute Resolution. In any such proceeding, Respondent shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and

mitigate the effects of the delay, and that Respondent complied with the requirements of this Section. If Respondent satisfies this burden, the time for performance of such obligation will be extended by EPA for such time as is necessary to complete such obligation.

XX. RESERVATION OF RIGHTS

1. EPA reserves all of its statutory and regulatory powers, authorities, rights, and remedies, both legal and equitable, which may pertain to Respondent's failure to comply with any of the requirements of this Order, including without limitation the assessment of penalties under §3008(h)(2) of RCRA, 42 U.S.C. §6928(h)(2). This Order shall not be construed as a covenant not to sue, release, waiver, or limitation of any rights, remedies, powers, and/or authorities, civil or criminal, which EPA has under RCRA, CERCLA, or any other statutory, regulatory, or common law authority of the United States.

2. EPA reserves the right to disapprove of work performed by Respondent pursuant to this Order and to request that Respondent perform additional tasks. However, prior to requiring additional tasks to be performed by Respondent, EPA will issue a written notice of disapproval, containing the reasonable basis for EPA's disapproval and its requirements that additional tasks be performed. In addition, EPA will consult with Respondent and its

Project Coordinator and attempt in good faith to resolve any disagreement regarding Respondent's performance of any of the terms and conditions of this Order prior to issuing any notice of disapproval.

3. As long as EPA determines that Respondent has timely and satisfactorily complied with the terms of this Order, EPA agrees not to perform any portion of the work required herein. EPA however, reserves the right to perform any portion of the work consented to herein or any additional site characterization, feasibility study, and remedial work in the event of noncompliance with the Order and in the event of an imminent and substantial endangerment to human health and/or the environment. Before EPA exercises its authority under CERCLA or RCRA to undertake response actions at the facility, EPA may first request that Respondent perform such response action. In any event, EPA reserves its right to seek reimbursement from Respondent for costs incurred by the United States to the extent those rights exist under law. Notwithstanding compliance with the terms of this Order, Respondent is not released from liability, if any, for the costs of any response actions taken or authorized by EPA.

4. If EPA determines that activities in compliance or noncompliance with this Order have caused or may cause a release of hazardous waste or hazardous constituent(s), or a threat to human health and/or the environment, or that Respondent is not

capable of undertaking any of the work ordered, EPA may order Respondent to stop further implementation of this Order for such period of time as EPA determines may be needed to abate any such release or threat and/or to undertake any action which EPA determines is necessary to abate such release or threat.

5. This Order is not intended to be nor shall it be construed to be a permit. Compliance by Respondent with the terms of this Order shall not relieve Respondent of its obligations to comply with RCRA or any other applicable local, state, or federal laws and regulations.

6. Notwithstanding any other provision of this Order, no action or decision by EPA pursuant to this Order, including without limitation, decisions of the Regional Administrator, the Director of the Waste Management Division, or any authorized representative of EPA, shall constitute final agency action giving rise to any right of judicial review prior to EPA's initiation of a judicial action to enforce this Order, including an action for penalties or an action to compel Respondent's compliance with the terms and conditions of this Order.

7. In any action brought by EPA for a violation of this Order, Respondent shall bear those burdens of proof required by statute and applicable case law.

8. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive or other appropriate relief relating to work that Respondent fails to perform pursuant to this Order at the facility, Respondent shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding were or should have been raised in the present matter.

XXI. OTHER CLAIMS

Nothing in this Order shall constitute or be construed as a release from any claim, cause of action, demand, or defense in law or equity, against any person, firm, partnership, or corporation for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituents, hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken or migrating from the facility. Respondent waives any claims or demands for compensation or payment under §§106(b), 111, and 112 of CERCLA against the United States or the Hazardous Substance Superfund established by 26 U.S.C. §9507 for, or arising out of, any activity performed or expense incurred pursuant to this Order.

Additionally, this Order does not constitute any decision on preauthorization of funds under §111(a)(2) of CERCLA.

XXII. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to this Order shall be undertaken in accordance with the requirements of all applicable local, state, and Federal laws and regulations. Respondent shall obtain or cause its representatives to obtain all permits and approvals necessary under such laws and regulations.

XXIII. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

1. Respondent agrees to indemnify and save and hold harmless the United States Government, its agencies, departments, agents, and employees, from any and all claims or causes of action arising from or on account of acts or omissions of Respondent or its officers, employees, agents, independent contractors, receivers, trustees, and assigns in carrying out activities required by this Order. This indemnification shall not be construed in any way as affecting or limiting the rights or obligations of Respondent or the United States under their various contracts.

2. Nothing herein shall be interpreted as limiting Respondent's rights under the Federal Tort Claims Act, as amended, 28 U.S.C. §2671, et. seq.

XXIV. MODIFICATION

1. This Order may only be modified by mutual agreement of EPA and Respondent. Any agreed modifications shall be in writing, be signed by both parties, shall have as their effective date the date on which they are signed by EPA, and shall be incorporated into this Order.

2. Any requests for a compliance date modification or revision of an approved workplan requirement must be made in writing. Such requests must be timely and provide justification for any proposed compliance date modification or workplan revision. EPA has no obligation to approve such requests, but if it does so, such approval must be in writing. Any approved compliance date or workplan modification shall be incorporated by reference into the Order.

XXV. SEVERABILITY

If any provision or authority of this Order or the application of this Order to any party or circumstances is held by any judicial or administrative authority to be invalid, the application of such provisions to other parties or circumstances and the remainder of the Order shall remain in force and shall not be affected thereby.

XXVI. TERMINATION AND SATISFACTION

The provisions of this Order shall be deemed satisfied upon Respondent's and EPA's execution of an "Acknowledgment of Termination and Agreement to Record Preservation and Reservation of Rights" ("Acknowledgment"). EPA will prepare the Acknowledgment for Respondent's signature. The Acknowledgment will specify that Respondent has demonstrated to the satisfaction of EPA that the terms of this Order, including any additional tasks determined by EPA to be required pursuant to this Order, have been satisfactorily completed. Respondent's execution of the Acknowledgment will affirm Respondent's continuing obligation (1) to preserve all records and (2) to recognize EPA's reservation of rights, in accordance with these respective sections of the Order after the rest of the Order is satisfactorily completed. EPA's execution of the Acknowledgment will constitute a covenant not to sue for work performed satisfactorily pursuant to this Consent Order. This covenant not to sue shall not apply either to conditions unknown on the date EPA executes the Acknowledgment or to unanticipated occurrences at the facility.

XXVII. SURVIVABILITY/PERMIT INTEGRATION

Except as otherwise expressly provided in this section, this Order shall survive the issuance or denial of a RCRA permit for the facility, and this Order shall continue in full force and effect after either the issuance or denial of such permit. Accordingly, Respondent shall continue to be liable for the performance of obligations under this Order notwithstanding the issuance or denial of such permit. If the facility is issued a RCRA permit and that permit expressly incorporates all or a part of the requirements of this Order, or expressly states that its requirements are intended to replace some or all of the requirements of this Order, Respondent may request a modification of this Order and shall, with EPA approval, be relieved of liability under this Order for those specific obligations.

XXVIII. SUBMITTAL SUMMARY

The following is a summary of the major deadlines required by this Order. To the extent that this Section is inconsistent with any other Section of the Order, such other section and not this summary shall apply.

Section	Action	Due Date
VIII	Designate a Project Coordinator, and notify EPA in writing of the Project Coordinator it has selected.	Within 10 days after the effective date of this Order.
IX	Submit Interim Measures Workplan and Health and Safety Plan.	Within 10 days after receipt of EPA's written notification directing the same.
IX	Submit Current Conditions Report, Pre-Investigation Evaluation of Corrective Measure Technologies Report, Draft RFI Workplan.	Within 75 days after effective date of Order.
IX	Submit Final RFI Workplan.	Within 45 days after receipt of EPA's comments on Draft RFI Workplan.
IX	Submit Draft CMS Workplan.	Within 30 days after receipt of EPA's approval of final RFI report.
IX	Submit Final CMS Workplan.	Within 30 days after receipt of EPA's comments on Draft CMS Workplan.
IX	Notify EPA orally and in writing of any new or additional information concerning a current or potential threat.	Orally within 48 hours after discovery and in writing, within 15 days.

IX	Provide RFI, CMS, or [other] report(s) to EPA.	According to the schedule contained in the Attachments 2 and 3.
XI	Submit progress reports.	10th day of each month following effective date of Order.
XI	Implement approved workplans.	Upon receipt of EPA's approval.
XI	Notify EPA in writing of any contractor(s) or consultant(s).	Within 14 days after the effective date of this Order.
XII	Inform EPA Project Coordinator which laboratories will be used.	Identify in applicable workplan.
XIII	Notify EPA in writing before engaging in any field activities.	Within 30 days after commencement of activities.
XIV	Obtain access agreements.	Within 30 days after approval of any workplan for which access is required.

XXIX. EFFECTIVE DATE

The effective date of this Order shall be the date that the Director of the Waste Management Division of EPA, Region 7, or his designee, has signed the Order.

IN THE MATTER OF Collis Inc.
Administrative Order on Consent under
Section 3008(h) of RCRA, 42 U.S.C. §6928(h)

IT IS SO AGREED:

DATE: November 2, 1993 BY: Richard T. Kennedy
Respondent Collis Inc.

DATE: November 1, 1993 BY: Audrey B. Asher
AUDREY B. ASHER
Senior Assistant Regional Counsel
U.S. Environmental Protection
Agency
Region 7

IT IS SO ORDERED:

DATE: Nov. 10, 1993 BY: Michael J. Sanderson for
DAVID A. WAGONER
Director
Waste Management Division
U.S. Environmental Protection
Agency
Region 7

Attachment 1

Legend

(1) Acid Storage Tank
(2) Cleaner Storage Tank
(3) Settling Basin
(4) Temporary Storage Tank
(5) Filter House
(6) Sludge Impoundments
--- outline of original impoundments
—— area currently excavated
(7) Chemical Storage Area
(8) Receiving Dock Inside Storage Area
(9) Receiving Dock Outside Storage Area
(10) Spent Chromic Acid Tank
(11) Pretreatment Tanks Area
(12) Nitric Acid Storage Tank
(13) HCl Acid Storage Tank
(14) Zinc Storage Tank
(15) Epoxy Lacquer Tanks

• Current Monitoring Well Locations
o Selected Additional Well and Borehole Locations
⟶ Surface Drainage

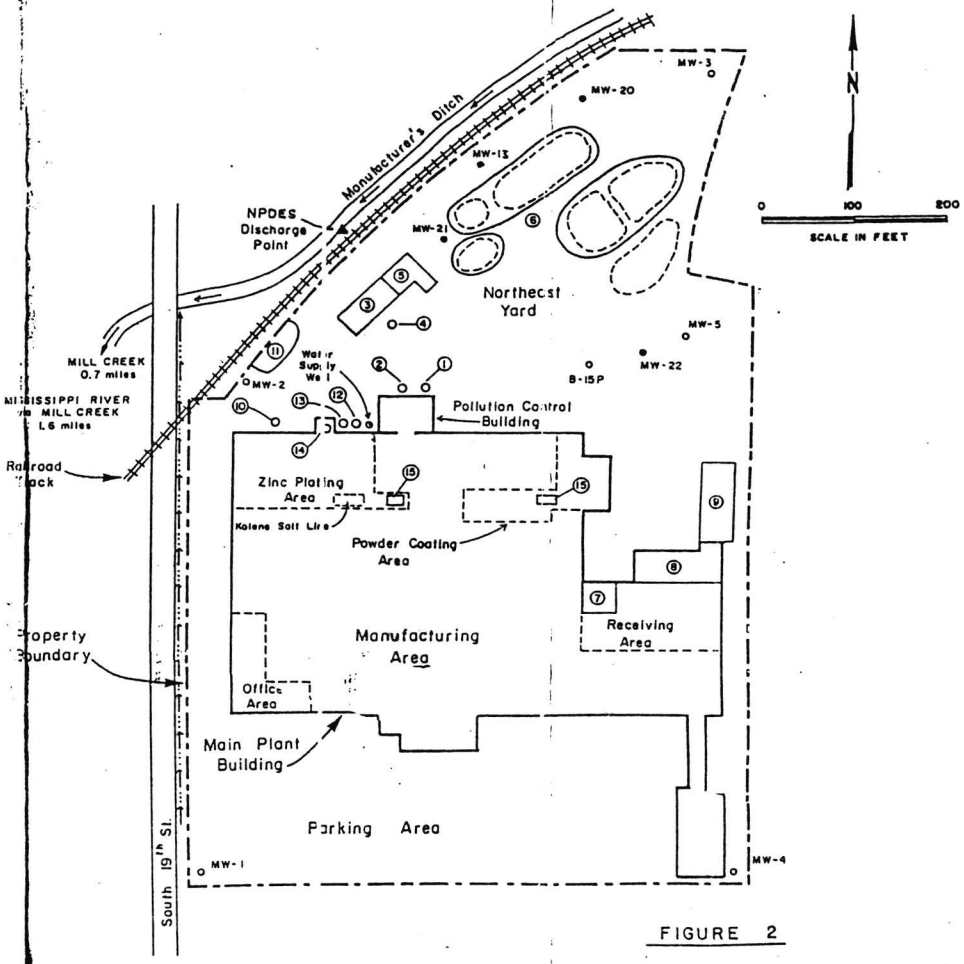

FIGURE 2

Collis Inc., Facility Map

Source : Adopted from maps supplied by Collis, Inc.

JACOBS ENGINEERING GROUP INC.

ATTACHMENT 2

Scope of Work for a RCRA Facility Investigation (RFI) at Collis Inc. Clinton, Iowa

PURPOSE

The purpose of the RFI is to determine the nature and extent of releases of hazardous waste or constituents from regulated units, solid waste management units, and other source areas at the facility and to gather all necessary data to support the Corrective Measures Study. The Respondent shall furnish all personnel, materials, and services necessary for, or incidental to, performing the RFI at the Collis Inc. facility.

SCOPE - The RFI consists of seven tasks:

- Task I: Description of Current Conditions;
- Task II: Pre-Investigation Evaluation of Corrective Measure Technologies;
- Task III: RFI Workplan Requirements;
- Task IV: Facility Investigation;
- Task V: Investigation Analysis;
- Task VI: Laboratory and Bench-Scale Studies; and
- Task VII: Reports.

TASK 1: Description of Current Conditions

The Respondent shall submit for EPA review and approval a report on the current conditions at the facility providing the background information pertinent to the facility, contamination and interim measures as set forth below. The data gathered during any previous investigations or inspections and other relevant data shall be included.

A. Facility Background

The Respondent's report shall summarize the regional location, pertinent boundary features, general facility physiography, hydrogeology, and historical use of the facility for the treatment, storage or disposal of

solid and hazardous waste. Respondent may use and compile the information contained within documents and reports previously submitted to EPA to satisfy this requirement, provided the documents and reports accurately reflect the conditions at the facility. The Respondent's report shall include:

1. A history and description of ownership and operation, solid and hazardous waste generation, treatment, storage and disposal activities at the facility;

2. Approximate dates and periods of past product and waste spills, identification of the materials spilled, the amount spilled, the location where spilled, and a description of the response actions conducted (local, state, or federal response units or private parties), including any inspection reports or technical reports generated as a result of the response; and

3. Maps depicting the following:

   a. General geographic location;

   b. Property lines, with the owners of all adjacent property clearly indicated;

   c. Topography (with a contour interval sufficient to depict the following features), and surface drainage depicting all waterways, wetlands, floodplains, recharge areas, water features, drainage patterns, and surface-water containment areas within a two mile radius of the facility;

   d. All tanks, buildings, utilities, paved areas and other physical and structural features of the facility, as well as easements and rights-of-way held by persons other than Respondent at the facility;

   e. All solid or hazardous waste treatment, storage or disposal areas at the facility, including both those areas which are currently in use and those used in the past;

   f. All underground tanks and pipes at the facility used for product, water or waste, including both those tanks and pipes which are currently being used and those used in the past;

g. Surrounding land uses (i.e., the manner in which the land is currently being used, such as whether the land is used for residential, commercial, agricultural, recreational purposes); and

h. The location of all production and groundwater monitoring wells, municipal and residential groundwater wells within a two mile radius of the facility. The location of all such wells shall be clearly identified on the map and information provided as to the elevation of the ground level at the well and the top of the casing.

All maps shall be of consistent scale and include the following:

i) map scale and date;

ii) surface water, including intermittent streams;

iii) orientation of map (north arrow);

iv) legal boundaries of the hazardous waste management facility;

v) access control (fences, gates); and

vi) location of operations units within the hazardous waste management facility site, where hazardous waste is (or will be) treated, stored or disposed (including equipment cleanup areas). All maps will be of sufficient detail and accuracy to locate and report all current and future work performed at the facility.

B. Nature and Extent of Contamination

The Respondent shall prepare and submit for EPA review and approval a preliminary report describing the existing information on the nature and extent of any contamination.

1. The Respondent's report shall summarize all possible areas of contamination. This, at a minimum, should include all regulated units, solid waste management units, spill areas, and other suspected source areas of contamination. For each area, the Respondent shall identify the following:

a. Location of unit/area (which shall be depicted on a facility map);

b. Quantities of solid and hazardous wastes;

c. Hazardous waste or constituents, to the extent known; and

d. Identification of areas where additional information is necessary.

2. The Respondent shall prepare an assessment and description of the existing degree and extent of contamination. This should include:

a. Available monitoring data and qualitative information on locations and levels of contamination at the facility;

b. All potential migration pathways including information on geology, pedology, hydrogeology, physiography, hydrology, water quality, and meteorology; and

c. The potential impact(s) on human health and the environment, including demography, ground water and surface water use, and land use.

C. Implementation of Interim Measures

The Respondent's report shall document interim measures which were or are being undertaken at the facility. This shall include:

1. Objectives of the interim measures: how the measure is mitigating a potential threat to human health and the environment and/or is consistent with and integrated into any long term solution at the facility;

2. Design, construction, operation, and maintenance requirements;

3. Schedules for design, construction and monitoring; and

4. Schedule for progree reports.

TASK II: Pre-Investigation Evaluation of Corrective Measures Technologies

Prior to starting the facility investigation, the Respondent shall submit to EPA a report that identifies the potential corrective measures technologies that may be used on-site or off-site for the containment, treatment, remediation, and/or disposal of any contamination. This report shall also identify any field data that needs to be collected in the facility investigation to facilitate the evaluation and selection of the final corrective measure or measures (e.g., compatibility of waste and construction materials, information to evaluate effectiveness, treatability of wastes, etc.).

TASK III: RFI Workplan Requirements

The Respondent shall prepare an RFI Workplan. This RFI Workplan shall include the development of several plans, which shall be prepared concurrently. During the RFI, it may be necessary to revise the RFI Workplan to increase or decrease the detail of information collected to accommodate the facility specific situation. The RFI Workplan includes the following:

A. Project Management Plan

The Respondent shall prepare a Project Management Plan which will include a discussion of the technical approach, schedules, budget, and personnel. The Project Management Plan will also include a description of qualifications of personnel performing or directing the RFI, including contractor personnel. This plan shall also document the overall management approach to the RFI, and a detailed schedule for conducting the RFI.

B. Data Collection Quality Assurance Plan

The Respondent shall prepare a plan to document all monitoring procedures: sampling, field measurements and sample analysis performed during the investigation to characterize the environmental setting, source, and contamination, so as to ensure that all information and data and resulting decisions are technically sound, statistically valid, and properly documented.

1. Data Collection Strategy

   The strategy section of the Data Collection Quality Assurance Plan shall include but not be limited to the following:

a. Description of the intended uses for the data, and the necessary level of precision and accuracy for these intended uses;

b. Description of methods and procedures to be used to assess the precision, accuracy and completeness of the measurement data;

c. Description of the rationale used to assure that the data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition or an environmental condition. Examples of factors which shall be considered and discussed include:

   i) Environmental conditions at the time of sampling;

   ii) Number of sampling points;

   iii) Representativeness of selected media; and

   iv) Representativeness of selected analytical parameters.

d. Description of the measures to be taken to assure that the following data sets generated after the effective date of this Order can be compared to each other:

   i) RFI data generated by the Respondent over some time period;

   ii) RFI data generated by an outside laboratory or consultant versus data generated by the Respondent;

   iii) Data generated by multiple consultants or laboratories; and

   iv) Data generated by an outside consultant or laboratory over some time period.

e. Details relating to the schedule and information to be provided in quality assurance reports. The reports should include but not be limited to:

   i) Periodic assessment of measurement data accuracy, precision, and completeness;

   ii) Results of performance audits

iii) Results of system audits;

iv) Significant quality assurance problems and recommended solutions; and

v) Resolutions of previously stated problems.

2. Sampling

The sampling section of the Data Collection Quality Assurance Plan shall discuss:

a. Selecting appropriate sampling locations, depths, etc.;

b. Providing a statistically sufficient number of sampling sites, such that a statistically valid comparison can be made between samples;

c. Measuring all necessary ancillary data;

d. Determining conditions under which sampling should be conducted;

e. Determining which media are to be sampled (e.g. groundwater, air, soil, sediment, etc.);

f. Determining which parameters are to be measured and where;

g. Selecting the frequency of sampling and length of sampling period;

h. Selecting the types of sample (e.g., composites vs. grabs) and number of samples to be collected;

i. Measures to be taken to prevent contamination of the sampling equipment and cross contamination between sampling points;

j. Documenting field sampling operations and procedures, including:

i) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, and adsorbing reagents);

ii) Procedures and forms for recording the exact location and specific considerations associated with sample acquisition;

iii) Documentation of specific sample preservation methods;

iv) Calibration of field devices;

v) Collection of replicate samples

vi) Submission of field-biased blanks, where appropriate;

vii) Potential interferences present at the facility;

viii) Construction materials and techniques, associated with monitoring wells and piezometers;

ix) Field equipment listing and sample containers;

x) Sampling order; and

xi) Decontamination procedures.

k. Selecting appropriate sample containers;

l. Sample preservation; and

m. Chain-of-custody, including:
i) Standardized field tracking and reporting forms to establish sample custody in the field prior to and during shipment; and

ii) Pre-prepared containing information necessary for effective sample tracking.

3. Field Measurements

The Field Measurements section of the Data Collection Quality Assurance Plan shall discuss:

a. Selecting appropriate field measurement locations, depths, etc.;

b. Providing a statistically sufficient number of field measurements;

c. Measuring all necessary ancillary data;

d. Determining conditions under which field measurements should be conducted;

e. Determining which media are to be addressed by appropriate field measurements (e.g., groundwater, soil, sediment, etc.);

f. Determining which parameters are to be measured and where;

g. Selecting the frequency of field measurements and length of field measurement period; and

h. Documenting field measurement operations and procedures, including:

i) Procedures and forms for recording raw data and the exact location, time, and facility-specific considerations associated with the data acquisition

ii) Calibration of field devices;

iii) Collection of replicate measurements;

iv) Submission of field-biased blanks, where appropriate;

v) Potential interferences present at the facility;

vi) Construction materials and techniques associated with monitoring wells and piezometers used to collect field data;

vii) Field equipment listing;

viii) Order in which field measurements were made; and

ix) Decontamination procedures.

4. Sample Analysis

The Sample Analysis section of the Data Collection Quality Assurance Plan shall specify the following:

a. Chain-of-custody procedures, including:

i) Definition of a responsible party to act as sample custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipments, and verify the data entered onto the sample custody records;

ii) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and

iii) Specification of laboratory sample custody procedures for sample handling, storage, and dispersion for analysis.

b. Sample storage procedures and storage times;

c. Sample preparation methods;

d. Analytical procedures, including:

i) Scope and application of the procedure;

ii) Sample matrix;

iii) Potential interferences;

iv) Precision and accuracy of the methodology; and

v) Method detection limits.

e. Calibration procedures and frequency;

f. Data reduction, validation and reporting;

g. Internal quality control checks, laboratory performance and system audits and frequency, including:

i) Method blank(s);

ii) Laboratory control sample(s);

iii) Calibration check sample(s);

iv) Replicate sample(s);

v) Matrix-spiked sample(s);

vi) "Blind" quality control sample(s);

vii) Control charts;

viii) Surrogate samples;

ix) Zero and span gases;

x) Reagent quality control checks;

h. Preventative maintenance procedures and schedules;

i. Corrective action (for laboratory problems); and

j. Sample turnaround time

C. **Data Management Plan**

The Respondent shall develop and initiate a Data Management Plan to document and track investigation data and results. This plan shall identify and set up data documentation materials and procedures, project file requirements, and project related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation.

1. Data Record

The data record shall include the following:

a. Unique sample or field measurement code;

b. Sampling or field measurement location and sample or measurement type;

c. Sampling or field measurement raw data;

d. Laboratory analysis ID number;

e. Property or component measured; and

f. Results of analysis (e.g., concentration).

2. Tabular Displays

The following data shall be presented in tabular displays:

a. Unsorted (raw) data;

b. Results for each medium, or for each constituent monitored;

c. Data reduction for statistical analysis;

d. Sorting of data by potential stratification factors (e.g., location, soil layer,topography); and

e. Summary data.

3. Graphical Displays

The following data shall be presented in geographical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.);

a. Display sampling location and sampling grids;

b. Indicate boundaries of sampling area and areas where more data are required;

c. Display levels of contamination at each sampling location;

d. Display geographical extent of contamination;

e. Display contamination levels, averages, and maxima;

f. Illustrate changes in concentration in relation to distance form the source, time, depth or other parameters; and

g. Indicate features affecting intramedia transport and show potential receptors.

D. Health and Safety Plan

The Respondent shall prepare a Health and Safety Plan. The Health and Safety Plan is subject to review and comment, but not approval, by EPA.

1. Major elements of the Health and Safety Plan shall include:

a. Facility description including availability of resources such as roads, water supply, electricity and telephone service;

b. Description of the known hazards and evaluation of the risks associated with the incident and with each activity conducted;

c. A listing of key personnel and alternates responsible for site safety, response operations, and for protection of public health;

d. Delineation of work areas;

e. Description of levels of protection to be worn by personnel in work areas;

f. Establishment of procedures to control site access;

g. Description of decontamination procedure for personnel and equipment;

h. Establishment of site emergency procedures;

i. Emergency medical care for injuries and toxicological problems;

j. Description of requirements for an environmental surveillance program;

k. Routine and special training required for responders; and

l. Establishment of procedures for protecting workers from weather-related problems.

2. The facility Health and Safety Plan shall be consistent with:

a. NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);

b. EPA Order 1440.1 - Respiratory Protection;

c. EPA Order 1440.3 - Health and Safety Requirements for Employees Engaged in Field Activities;

d. Facility Contingency Plan;

e. EPA Standard Operating Safety Guide (1984);

f. OSHA regulations particularly in 29 CFR 1910 and 1926;

g. State and local regulations; and

h. Other EPA guidance as provided.

E. Community Relations Plan

The Respondent shall prepare a plan for the dissemination of information to the public regarding investigation activities and results.

TASK IV: Facility Investigation

The Respondent shall conduct those investigations necessary to: characterize the facility (Environmental Setting); define the source (Source Characterization); define the degree and extent of any contamination (Contamination Characterization); and identify actual or potential receptors.

The investigations should result in data of adequate technical quality to support the development and evaluation of a corrective measure alternative or alternatives during the Corrective Measures Study.

The site investigation activities shall follow the plans set forth in Task III. All sampling and analyses shall be conducted in accordance with the Data Collection Quality Assurance Plan. All sampling locations shall be documented in a log and identified on a detailed site map.

A. Environmental Setting

The Respondent shall collect information to supplement and verify existing information on the environmental setting at the facility. The Respondent shall characterize the following:

1. Hydrogeology

   The Respondent shall conduct a program to evaluate hydrogeologic conditions at the facility. This program shall provide the following information:

   a. A description of the regional and facility specific geologic and hydrogeologic characteristics affecting groundwater flow beneath the facility, including:

      i) Regional and facility specific stratigraphy: description of strike and dip, identification of stratigraphic contacts;

      ii) Structural geology: description of local and regional structural features (e.g. folding, faulting, tilting, jointing, etc.);

      iii) Depositional history;

      iv) Identification and characterization of areas and amounts of recharge and discharge;

      v) Regional and facility specific ground water flow patterns; and

vi) Characterize seasonal variations in the ground water flow regime.

b. An analysis of any topographic features that might influence the ground water flow system.

c. Based on field data, test, and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated units), including:

i) Hydraulic conductivity and porosity (total and effective);

ii) Lithology, grain size, sorting, degree of cementation;

iii) An interpretation of hydraulic interconnections between saturated zones; and

iv) The attenuation capacity and mechanisms of the natural earth materials (i.e., ion exchange capacity, organic carbon content, mineral content, etc.).

d. Based on field studies and cores, structural geology and hydrogeologic cross-sections showing the extent (depth, thickness, lateral extent) of hydrogeologic units which may be part of the migration pathways identifying:

i) Sand and gravel deposits in unconsolidated deposits;

ii) Zones of fracturing or channeling in consolidated or unconsolidated deposits;

iii) Zones of higher or lower permeability that might direct and restrict the flow of contaminants;

iv) The uppermost aquifer: geologic formation, group of formations, or part of a formation capable of yielding a significant amount of ground water to wells or springs; and

v) Water-bearing zones above the first confining layer that may serve as a pathway for contaminant migration including perched zones of saturation.

e. Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including:

i) Water level contour and/or potentiometric maps;

ii) Hydrologic cross-sections showing vertical gradients;

iii) The flow system, including the vertical and horizontal components of flow; and

iv) Any temporal changes in hydraulic gradients, (e.g., seasonal influences).

f. A description of man-made influences that may affect the hydrogeology of the site, identifying:

i) Active and inactive local water-supply and production wells with an approximate schedule of pumping; and

ii) Man-made hydraulic structures (pipelines, French drains, ditches, unlined ponds, septic tanks, NPDES outfalls, retention areas, etc.).

2. Soils

The Respondent shall conduct a program to characterize the soil and rock units above the water table in the vicinity of the contaminant release(s). Such characterization may include but not be limited to, the following information:

a. SCS soil classification;

b. Surface soil distribution;

c. Soil profile, including ASTM classification of soils;

d. Transects of soil stratigraphy;

e. Hydraulic conductivity (saturated and unsaturated);

f. Relative permeability;

g. Bulk density;

h. Porosity;

i. Soil sorptive capacity;

j. Cation exchange capacity (CEC);

k. Soil organic content;

l. Soil pH;

m. Particle size and distribution;

n. Depth of water table;

o. Moisture content;

p. Effect of stratification on unsaturated flow;

q. Infiltration;

r. Evapotranspiration;

s. Storage capacity;

t. Vertical flow rate; and

u. Mineral content.

3. Surface Water and Sediment

The Respondent shall conduct a program to characterize the surface water bodies in the vicinity of the facility. Such characterization shall include, but not be limited to, the following activities and information:

a. Description of the temporal and permanent surface-water bodies including:

i) For impoundments: location, elevation, surface area, depth, volume, freeboard, and purpose of the impoundment.

ii) For streams, ditches, drains, swamps and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, and flooding tendencies (i.e., 100 year event);

iii) Drainage patterns; and

iv) Evapotranspiration.

b. Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients, chemical oxygen demand, total organic carbon, specific contamination concentrations, etc.

c. Description of sediment characteristics including:

i) Deposition area;

ii) Thickness profile; and

iii) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.).

4. Air

The Respondent shall provide information characterizing the climate in the vicinity of the facility. Such information shall include, but not be limited to:

a. A description of the following parameters:

i) Annual and monthly rainfall averages;

ii) Monthly temperature averages and extremes;

iii) Wind speed and direction;

iv) Relative humidity/dew point;

v) Atmospheric pressure;

vi) Evaporation data;

vii) Development of inversions; and

viii) Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence.

B. Source Characterization

The Respondent shall collect analytical data to completely characterize the wastes and the areas where wastes have been placed, collected or removed including: type; quantity; physical form; disposition; and facility characteristics affecting release (engineered barriers). This shall include quantification of the following specific characteristics, at each source area:

1. Unit/Disposal Area Characteristics:

   a. Location of unit/disposal area;

   b. Type of unit/disposal area;

   c. Design features;

   d. Operating practices (past and present);

   e. Period of operation;

   f. Age of unit/disposal area;

   g. General physical condition; and

   h. Method used to close the unit/disposal area.

2. Waste Characteristics:

   a. Type of waste placed in the unit;

      i) Hazardous waste classification, e.g. ignitable, corrosive, toxicity characteristic (EP and TCLP) listing;

      ii) Quantity of waste per unit or disposal area; and

      iii) Chemical composition.

   b. Physical and chemical characteristics;

      i) Physical form (solid, liquid, gas);

      ii) Physical description (e.g. powder, oily sludge);

      iii) Temperature;

iv) pH;

v) General chemical class (e.g., acid, base, solvent);

vi) Molecular weight;

vii) Density;

viii) Boiling point;

ix) Viscosity;

x) Solubility in water;

xi) Cohesiveness of the waste;

xii) Vapor pressure; and

xiii) Flash point.

c. Migration and dispersal characteristics of the waste;

i) Sorption;

ii) Biodegrability, biotransformation;

iii) Photodegradation rates;

iv) Hydrolysis rates; and

v) Chemical transformation, particularly decomposition products.

C. **Contamination Characterization**

The Respondent shall collect analytical data on groundwater, soils, surface water, and sediment contamination in the vicinity of the facility. This data shall be sufficient to define the extent, origin, direction, and rate of movement of any contaminant plumes on-site and off-site. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individuals performing the sampling and analysis. The Respondent shall address the following types of contamination at the facility:

1. Groundwater Contamination

The Respondent shall conduct a Groundwater Investigation to characterize any plumes of contamination at the facility. This investigation at a minimum will provide the following information:

a. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility;

b. The horizontal and vertical direction of contamination movement;

c. The velocity of contaminant movement;

d. The horizontal and vertical concentration profiles of 40 C.F.R. Part 261, Appendix VIII constituents in the plume(s) which are reasonably expected to be present in any hazardous waste or hazardous waste constituents managed at the facility. The Appendix VIII constituents to be profiled must include potential degradation products;

e. An evaluation of factors influencing the plume movement; and

f. An extrapolation of future contaminant movement.

2. Soil Contamination

The Respondent shall conduct an investigation to characterize the contamination of soil and rock units above the water table in the vicinity of the contaminant release. The investigation shall provide the following information:

a. A description of the horizontal and vertical extent of contamination;

b. A description of contaminant and soil chemical properties within the contaminant source area and plume, including contaminant concentration, solubility, speciation, adsorption, leachability, exchange capacity, biodegrability, hydrolysis, photolysis, oxidation and other factors that might affect contaminant migration and transformation.

c. Specific contaminant concentrations;

d. The velocity and direction of contaminant movement; and

e. An extrapolation of future contaminant movement.

3. Surface Water and Sediment Contamination

The Respondent shall conduct an investigation to characterize contamination in surface water bodies in the area of the facility resulting from contaminant releases at the facility. The investigation shall include, but not be limited to, the following information:

a. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility, and the extent of contamination in underlying sediments;

b. The horizontal and vertical direction of contaminant movement;

c. The contaminant velocity;

d. An evaluation of the physical, biological and chemical factors influencing contaminant movement;

e. An extrapolation of future contaminant movement; and

f. A description of the chemistry of the contaminated surface waters and sediments, including pH, total dissolved solids, specific contaminant concentrations, etc.

The Respondent shall document the procedures used in making the above determinations.

D. Potential Receptors

The Respondent shall collect data describing the human populations and environmental systems that are susceptible to contaminant exposure from the facility. The following characteristics shall be identified:

1. Current local uses and possible future uses of ground-water:

a. Type of use (e.g., drinking water source, municipal or residential, agricultural, domestic/non-potable, and industrial); and

b. Location of groundwater users including wells and discharge areas.

2. Current local uses and possible future uses of surface waters draining the facility:

   a. Domestic and municipal (e.g., potable and lawn/gardening watering);

   b. Recreational (e.g., swimming, fishing);

   c. Agricultural;

   d. Industrial; and

   e. Environmental (e.g., fish and wildlife propagation).

3. Human use of or access to the facility and adjacent lands, including:

   a. Recreation;

   b. Hunting;

   c. Residential;

   d. Commercial; and

   e. Zoning.

   f. A brief description of the biota in surface water bodies on, adjacent to, or affected by the facility.

5. A brief description of the ecology overlying and adjacent to the facility.

6. A brief description of any endangered or threatened species at or near the facility.

7. A description of any endangered or threatened species near the facility.

TASK V: Investigation Analysis

The Respondent shall prepare analyses and summary of all facility investigations and their results. The objective of this task shall be to ensure that the investigation data are sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, the potential threat to human health and/or the environment, and to support the Corrective Measures Study.

A. Data Analysis

The Respondent shall analyze all facility investigation data outlined in Task IV and prepare a report on the type and extent, both horizontal and vertical, of contamination at the facility including sources and migration pathways. The Report shall describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative of the area, as well as indicate the level of certainty of its conclusions.

B. Protection Standards

1. Groundwater Protection Standards

For regulated units, the Respondent shall provide information to support the Agency's selection/development of Groundwater Protection Standards for all of the Appendix VIII constituents found in the groundwater during the RFI (Task IV).

a. The Groundwater Protection Standards shall consist of:

i) For any constituents for which a maximum contaminant level (MCL) is established at 40 C.F.R. Part 141 Subparts B and G, and 56 _ Federal Register 3526, the respective established MCL value if the background level of the constituent is below that MCL; or

ii) The background level of that constituent in the groundwater; or

iii) An EPA approved Alternate Concentration Limit (ACL).

b. Information to support the Agency's subsequent selection of Alternate Concentration Limits (ACLs) shall be developed by the Respondent in accordance with EPA guidance. For any proposed ACLs the Respondent shall include a justification based upon the criteria set forth in 40 C.F.R. § 264.94(b).

c. EPA shall notify the Respondent in writing of approval, disapproval or modification, as well as specify in writing the reason(s) for any disapproval or modification.

d. Within 30 calendar days of receipt of the EPA's notification or disapproval of any proposed ACL, the Respondent shall amend and submit revisions to the EPA.

2. Other Relevant Protection Standards

The Respondent shall identify all relevant and applicable standards for the protection of human health and the environment (e.g., National Ambient Air Quality Standards, Federally-approved state water quality standards, etc.).

TASK VI: Laboratory and Bench Scale Studies

The Respondent shall conduct laboratory and/or bench scale studies to determine the applicability of a corrective measure technology or technologies to facility conditions. The Respondent shall analyze the technologies, based on literature review, vendor contacts, and past experience to determine the testing requirements.

The Respondent shall develop a testing plan identifying the type(s) and goal(s) of the study(ies), the level of effort needed, and the procedures to be used for data management and interpretation.

Upon completion of the testing, the Respondent shall evaluate the testing results to assess the technology or technologies with respect to the site-specific questions identified in the test plan.

The Respondent shall include in the RFI Report a summary of the testing program and its results, both positive and negative.

TASK VII: Reports

A. Preliminary and Workplan

The Respondent shall submit to the EPA reports on Tasks I and II when it submits the RFI Workplan (Task III).

B. Progress

The Respondent shall at a minimum provide EPA with signed, progress reports every month which contain:

1. A description of the RFI activities completed during the reporting period;

2. Summaries of all findings;

3. Summaries of all changes made to the RFI during the reporting period;

4. Summaries of all contacts, during the reporting period, with representatives of the local community, public interest groups or State government concerning activities at the site;

5. Summaries of all problems or potential problems encountered during the reporting period;

6. Actions being taken to rectify problems;

7. Changes in project coordinator, principal contractor, laboratory, and/or consultant during the reporting period;

8. Projected work for the next reporting period; and

9. Copies of laboratory/monitoring data received and/or generated during the reporting period.

C. Draft and Final

Ninety days after EPA approval of the RFI Workplan, the Respondent shall prepare a draft RFI Report to present Tasks IV and V. Thirty days after EPA comment on the Draft RFI Report, Respondent shall submit a final RFI report incorporating comments received on the Draft RFI Report. Task VI shall be submitted as a separate report when the Final RFI Report is submitted.

Three copies of all reports, including the Task I report, Task II report, Task III workplan, Task VI report and both the Draft and Final RFI Reports (Task IV and V) shall be provided by the Respondent to EPA.

Schedule for Report Submittal:

The Respondent shall develop and submit the following reports and workplans in accordance with the schedule below:

Facility Submittal	Due Date
Description of Current Condition (Task I)	75 days after the effective date of this Order.
Pre-Investigation Evaluation of Corrective Measures Technologies of (Task II)	75 daysafter the effective date of this Order.
Draft RFI Workplan (Task III)	75 days after the effective date of this Order.
Final RFI Workplan (Task III)	45 days after receipt of EPA comments on the Draft RFI Workplan.
Draft RFI Report (Tasks IV, and V)	90 days after RFI Workplan Approval.
Final RFI Report (Tasks IV, and V)	30 days after receipt of EPA comments on the Draft RFI Report.
Laboratory and Bench-Scale Studies (Task VI)	Concurrent with Final RFI Report.

Progress Reports on Tasks I through VI	10th Monthly by the 10th day of each month beginning on the month following the effective date of the Order.

ATTACHMENT 3

Scope of Work for a Corrective Measures Study
at
Collis Incorporated
Clinton, Iowa

PURPOSE

The purpose of the Corrective Measure Study (CMS) is to develop and evaluate the corrective action alternative or alternatives, as necessary, and to recommend the corrective measure or measures, if any, to be undertaken at the facility. The Respondent will furnish the personnel, materials, and services necessary to prepare the corrective measure study, except as otherwise specified.

SCOPE - The Corrective Measure Study consists of four tasks:

Task VIII: Identification and Development of the Corrective Measure Alternative or Alternatives;

Task IX: Evaluation of the Corrective Measure Alternative or Alternatives;

Task X: Justification and Recommendation of the Corrective Measure or Measures; and

Task XI: Reports.

TASK VIII: CMS Workplan - Identification and Development of the Corrective Measure Alternative or Alternatives

Based on the results of the RCRA Facility Investigation and consideration of the identified Preliminary Corrective Measure Technologies (Task II), the Respondent shall identify, screen and develop the alternative or alternatives for removal, containment, treatment and/or other remediation of the contamination based on the objectives established for the corrective action.

A. Description of Current Situation

The Respondent shall submit an update to the information describing the current conditions at the facility and the known nature and extent of contamination as documented by the RFI Report. The Respondent shall provide to EPA an update to information presented in Task I of the RFI regarding previous response activities and any interim measures which have or are being implemented at the facility. The Respondent shall also make a facility-specific

statement of the purpose for the response, based on the results of the RFI. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

B. **Establishment of Corrective Action Objectives**

The Respondent, in conjunction with the EPA, shall establish site specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RFI, EPA Guidance, and the requirements of any applicable Federal statutes. At a minimum, all corrective actions concerning groundwater releases from regulated units must be consistent with, and as stringent as, those required under 40 CFR 264.100.

C. **Screening of Corrective Measure Technologies**

The Respondent shall review the results of the RFI and reassess the technologies specified in the Task II report as approved by EPA and identify additional technologies which are applicable at the facility. The Respondent shall screen the preliminary corrective measures technologies identified in Task II of the RFI and any supplemental technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste- and site-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations. Site, waste, and technology characteristics which are used to screen inapplicable technologies are described in more detail below:

1. Site Characteristics

   Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics should be eliminated from further consideration.

2. Waste Characteristics

   Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited

by these waste characteristics should be eliminated from consideration.

3. Technology Limitations

During the screening process, the level of technology development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.

D. Identification of the Corrective Measure Alternative or Alternatives

The Respondent shall develop the corrective measure alternative or alternatives based on the corrective action objectives and analysis of Preliminary Corrective Measure Technologies, as presented in Task II of the RFI and as supplemented following the preparation of the RFI Report. The Respondent shall rely on engineering practice to determine which of the previously identified technologies appear most suitable for the site. Technologies can be combined to form the overall corrective action alternative or alternatives. The alternative or alternatives developed should represent a workable number of option(s) that each appear to adequately address all site problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. The Respondent shall document the reasons for excluding technologies, identified in Task II, as supplemented in the development of the alternative or alternatives.

TASK IX: Evaluation of the Corrective Measure Alternative or Alternatives

The Respondent shall describe each corrective measure alternative that passes through the Initial Screening in Task VIII and evaluate each corrective measure alternative and its components. The evaluation shall be based on technical, environmental, human health and institutional concerns. The Respondent shall also develop cost estimates for each corrective measure.

A. **Technical/Environmental/Human Health/Institutional**

The Respondent shall provide a description of each corrective measure alternative which includes, but is not limited to, the following: preliminary process flow sheets, preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required. The Respondent shall evaluate each alternative in the following areas:

1. Technical

The Respondent shall evaluate each corrective measure alternative based on performance, reliability, implementability and safety.

a. The Respondent shall evaluate performance based on the effectiveness and useful life of the corrective measure:

i) Effectiveness shall be evaluated in terms of ability to perform intended functions, such as containment, diversion, removal, destruction, or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance criteria. Any specific waste or site characteristics which could potentially impede effectiveness shall be considered. The evaluation should also consider the effectiveness of combinations of technologies; and,

ii) Useful life is defined as the length of time the level of effectiveness can be maintained. Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure shall be evaluated in terms of the projected

service lives of its component technologies. Resource availability in the future life of the technology, as well as appropriateness of the technologies, must be considered in estimating the useful life of the project.

b. The Respondent shall provide information on the reliability of each corrective measure including their operation and maintenance requirements and their demonstrated reliability:

i) Operations and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activities should be regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements shall also be considered; and

ii) Demonstrated and expected reliability is a way of measuring the risk and effect of failure. The Respondent should evaluate whether the technologies have been used effectively under analogous conditions; whether the combination of technologies have been used together effectively; whether failure of any one technology has an immediate impact on receptors; and whether the corrective measure has the flexibility to deal with uncontrollable changes at the site.

c. The Respondent shall describe the implementability of each corrective measure including the relative ease of installation (constructability) and the time required to achieve a given level of response:

i) Constructability is determined by the conditions both internal and

external to the facility conditions and include such items as location of underground utilities, depth to the water table, heterogeneity of subsurface materials, and location of the facility (i.e., remote location vs. congested urban area). The Respondent shall evaluate what measures can be taken to facilitate construction under these conditions. External factors which affect implementation include the need for special permits or agreements, equipment availability, and the location of suitable off-site treatment or disposal facilities; and

ii) Time has two components that shall be addressed: the time it takes to implement a corrective measure and the time it takes to actually see beneficial results. Beneficial results are defined as the reduction of contaminants to some acceptable, pre-established level.

d. The Respondent shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments as well as those workers during implementation. Factors to consider are fire, explosion, and exposure to hazardous substances.

2. Environmental

The Respondent shall prepare a brief environmental assessment for each alternative. The Environmental Assessment shall focus on the facility conditions and pathways of contamination actually addressed by each alternative. The Environmental Assessment for each alternative will include, at a minimum, an evaluation of: the short- and long-term beneficial and adverse effects on environmentally sensitive areas; and an analysis of measures to mitigate adverse effects.

3. Human Health

The Respondent shall assess each alternative in terms of the extent of which it mitigates short- and long-term potential exposure to any residual contamination and protects human health both during and after implementation of the corrective measure. The assessment will describe the levels and characterizations of contaminants on-site, potential exposure routes, and potentially affected populations. Each alternative will be evaluated to determine the level of exposure to contaminants and the reduction over time. For management of mitigation measures, the relative reduction of impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or guidelines acceptable to EPA.

4. Institutional

The Respondent shall assess relevant institutional needs for each alternative. Specifically, the effects of Federal, state and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations on the design, operation, and timing of each alternative.

5. Other

The Respondent may evaluate such other factors as may be relevant in the selection of the corrective measure(s), if any, for the facility.

B. Cost Estimate

The Respondent shall develop an estimate of the cost of each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall include both capital and operation and maintenance costs.

1. Capital costs consist of direct (construction) and indirect (nonconstruction and overhead) costs.

   a. Direct and capital costs include:

i) Construction costs: costs of materials, labor, and equipment required to install the corrective measure.

ii) Equipment costs: Costs of treatment, containment, disposal and/or service equipment necessary to implement the corrective action; these materials remain until the corrective action is complete.

iii) Land and site development costs: Expenses associated with the purchase of land and development of existing property; and

iv) Buildings and services costs: Costs of process and nonprocess buildings, utility connections, purchased services, and disposal costs.

b. Indirect capital costs include:

i) Engineering expenses: Costs of administration, design, construction supervision, drafting, and testing of corrective measure alternatives;

ii) Legal fees and license or permit costs: Administrative and technical costs necessary to obtain licenses and permits for installation and operation;

iii) Startup and shakedown costs: Costs incurred during corrective measure startup; and

iv) Contingency allowances: Funds to cover costs resulting from unforeseen circumstances, such as adverse weather conditions, strikes, and inadequate facility characterization.

2. Operation and Maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective measure. The Respondent shall consider the following operation and maintenance cost components:

a. Operating labor costs: Wages, salaries, training, overhead, and fringe benefits

associated with the labor needed for post-construction operations;

b. Maintenance materials and labor costs; Costs for labor, parts, and other resources required for routine maintenance of facilities and equipment;

c. Auxiliary materials and energy: Costs of such items as chemicals and electricity for treatment plant operations, water, sewer service, and fuel;

d. Purchased services: Sampling costs, laboratory fees, and professional fees for which the need can be predicted;

e. Disposal and treatment costs: Costs of transporting, treating, and disposing of waste materials, such as treatment plant residues, generated during operations;

f. Administrative costs: Costs associated with administration of corrective measure operation and maintenance not included under other categories;

g. Insurance, taxes, and licensing costs: Costs of such items as liability and sudden accidental insurance; real estate taxes on purchased land or rights-of-way; licensing fees for certain technologies; and permit renewal and reporting costs;

h. Maintenance reserve and contingency funds: Annual payments into escrow funds to cover (1) costs of anticipated replacement or rebuilding of equipment and (2) any large unanticipated operation and maintenance costs; and

i. Other costs: Items that do not fit any of the above categories.

TASK X: Justification and Recommendation of the Corrective Measure or Measures

The Respondent shall justify and recommend a corrective measure alternative using the criteria set forth above. This recommendation shall include summary tables which allow the alternative or alternatives to be understood easily. Tradeoffs among health risks, environmental effects, and other pertinent factors shall be highlighted.

The EPA will select the corrective measure alternative or alternatives to be implemented based on the results of Tasks IX and X. At a minimum, the following criteria will be used to justify the final corrective measure or measures.

A. Technical

1. Performance - corrective measure or measures which are most effective at performing their intended functions and maintaining the performance over extended periods of time will be given preference;

2. Reliability - corrective measure or measures which do not require frequent or complex operation and maintenance activities and that have proven effective under waste and facility conditions similar to those anticipated will be given preference;

3. Implementability - corrective measure or measures which can be constructed and operated to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time will be preferred; and,

4. Safety - corrective measure or measures which pose the least threat to the safety of nearby residents and environments as well as workers during implementation will be preferred.

B. Human Health

The corrective measure or measures must comply with existing EPA criteria, standards, or guidelines for the protection of human health. Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred.

C. Environmental

The corrective measure or measures posing the least adverse impact (or greatest improvement) over the shortest period of time on the environment will be favored.

TASK XI: Reports

TASK XI: Reports

A. Progress

The Respondent shall at a minimum provide EPA with signed, monthly, progress reports containing:

1. A description of the CMS activities completed during the reporting period;

2. Summaries of all findings;

3. Summaries of all changes made to the CMS during the reporting period;

4. Summaries of all contacts, during the reporting period, with representatives of the local community, public interest groups or State government concerning CMS activities at the site;

5. Summaries of all problems or potential problems encountered during the reporting period;

6. Actions being taken to rectify problems;

7. Changes in project coordinator, principal contractor, laboratory, and/or consultant during the reporting period;

8. Projected work for the next reporting period; and

9. Copies of laboratory/monitoring data received and/or generated during the reporting period.

B. Draft

The Respondent shall prepare a CMS Report presenting the results of Tasks VIII through X and recommending a corrective measure alternative. Respondent shall submit three copies of the draft report to EPA 30 days after Respondent submits the final RFI Report.

The draft CMS report shall include at a minimum:

1. A description of the facility which includes a site topographic map and preliminary layouts.

2. A summary of the corrective measure or measures;

   a. Description of the corrective measure or measures and rationale for selection;

b. Performance expectations;

c. Preliminary design criteria and rationale;

d. General operation and maintenance requirements; and

e. Long-term monitoring requirements.

3. A summary of the RFI and impact on the selected corrective measure or measures;

a. Field studies (groundwater, surface water, soil, air); and

b. Laboratory studies (bench scale, pilot scale).

4. Design and Implementation Precautions;

a. Special technical problems;

b. Additional engineering data required;

c. Permits and regulatory requirements;

d. Access, easements, right-of-way;

e. Health and safety requirements; and

f. Community relations activities.

5. Cost Estimates and Schedules;

a. Capital cost estimates;

b. Operation and maintenance cost estimate; and

c. Project schedule (design, construction, operation).

Three copies of the draft CMS report shall be provided by the Respondent to EPA.

C. **Final**

Thirty days after receipt of EPA comments on the Draft CMS Report, the Respondent shall finalize the CMS Report incorporating comments received from EPA.

Schedule for Report Submittal

The Respondent shall develop and submit the following reports in accordance with the schedule below:

Facility Submittal	Due Date
Draft CMS Workplan (Tasks VIII, IX and X)	30 days after receipt of EPA approval of Final RFI Report
Final CMS Workplan (Tasks VIII, IX and X)	30 days after receipt of EPA's comments on Draft CMS Workplan
Draft CMS Report (Tasks VIII, IX and X)	30 days after submittal of the Final RFI Report
Final CMS Report (Tasks VIII, IX and X)	30 days after receipt of EPA comments on the Draft CMS Report
Progress Reports on Tasks VIII, IX, and X	monthly, beginning the 10th day of the month following the effective date of the Order

ATTACHMENT 4

REFERENCES

The following list comprises additional guidance documents and other information which may be useful in implementing a RCRA §3008(h) Order. This list does not include every guidance document pertaining to work performed under a §3008(h) Order. Documents are organized according to the relevant section of the Order. Contacts for additional information are included at the end of this list.

Section IX. Work to be Performed

"Handbook: Stabilization Technologies for RCRA Corrective Actions," EPA/625/6-91/026, August 1991.

"Interim Final RCRA Facility Investigation (RFI) Guidance," Volumes I - IV, EPA/530/SW-89-031, May 1989.

"Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA," Interim Final EPA/540/G-89/004, OSWER Directive 9355.3-01, October 1988.

"RCRA Ground-water Monitoring Technical Enforcement Guidance Document (TEGD)," OSWER Directive 9950.1, September 1986.

"Handbook: Ground Water," Volumes I and II, EPA/625/6-90/016 (a&b), September 1990 and July 1991.

"Ground-Water Modeling: An Overview and Status Report," EPA/600/2-89/028, December 1988.

"Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities," Interim Final, EPA/530/SW-89/026, April 1989.

"Data Quality Objectives for Remedial Response Activities," EPA/540/G-87/003 & 004, OSWER Directive 9335.0-7B, March 1987.

"Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors," OSWER Directive 9285.6-03, March 25, 1991.

"Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A)," Interim Final, EPA/540/1-89/002, December 1989.

"Risk Assessment Guidance for Superfund, Volume II: Environmental Evaluation Manual," Interim Final, EPA/540/1-89/001, March 1989.

"Final Guidance for Data Useability in Risk Assessment," (Parts A & B), OSWER Directive 9285.7-09A, April 1992.

"Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference Document," EPA 600/3-89/013, March 1989.

"A Compendium of Superfund Field Operations Methods," Two Volumes, EPA/540/P-87/001a&b, OSWER Directive 9355.0-14, August 1987.

"Technical Guidance Document: Construction Quality Assurance for Hazardous Waste Land Disposal Facilities," EPA 530/SW-86/031, OSWER Directive 9472.003, October 1986.

"Corrective Measures for Releases to Groundwater from SWMUs," Draft Final, EPA/530-SW-88-020, March 1985.

"Basics of Pump-and-Treat Groundwater Remediation Technology," EPA/600/8-90/003, March 1990.

"Technical Guidance for Corrective Measures--Determining Appropriate Technology and Response for Air Releases," Draft Final, EPA/530-SW-88-021, March 1985.

"Air/Superfund National Technical Guidance Study Series," Volumes I-IV, EPA 450/1-89-001,002,003,004 (1989 and 1990).

"Corrective Measures for Releases to Soil from SWMUs," Draft F EPA/530-SW-88-022, March 1985.

"Technical Guidance for Corrective Measures -- Subsurface Gas," EPA/530-SW-88-023, March 1985.

"Guide for Conducting Treatability Studies under CERCLA," Interim Final, EPA/540/2-89/058.

"Guide for Conducting Treatability Studies under CERCLA: Aerobic Biodegradation Remedy Screening," EPA/540/2-91/013B, July 1991.

"Guide for Conducting Treatability Studies under CERCLA: Chemical Dehalogenation," EPA/540/R-92/013B.

"Guide for Conducting Treatability Studies under CERCLA: Soil Vapor Extraction," EPA/540/2-91/019B, September 1991.

"Guide for Conducting Treatability Studies under CERCLA: Soil Washing," EPA/540/2-91/020B, September 1991.

"Selected Alternative and Innovative Treatment Technologies for Corrective Action and Site Remediation," EPA/540/8-91/092, 1991.

"Synopses of Federal Demonstrations of Innovative Site Remediation Technologies," EPA/540/8-91/009, May 1991.

"Bibliography of Federal Reports and Publications Describing Alternative and Innovative Treatment Technologies for Corrective Action and Site Remediation," EPA/540/8-91/007, May 1991.

Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments," EPA/530/SW-89/047, July 1989.

"Handbook on In-Situ Treatment of Hazardous Waste-Contaminated Soils," EPA/540/2-90/002, January 1990.

"Stabilization/Solidification for CERCLA and RCRA Wastes," EPA/625/6-89/022, May 1989.

"Technology Screening Guide for Treatment of CERCLA Soils and Sludges," EPA/540/2-88/004, September 1988.

"Health and Safety Requirements of Employees Employed in Field Activities," EPA Order 1440.2, July 12, 1981.

Section XII. Quality Assurance

"Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," QAMS-005/80, December 29, 1980.

GENERAL INFORMATION:

"OSWER Directives - System Catalog," OSWER Directive 9013.15-3D, March 1992. (Provides a list of OSWER Directives published through March 1991.)

"Technical Support Services for Superfund Site Remediation and RCRA Corrective Action" (third edition), EPA/540/8-91/091, March 1992.

"Accessing Federal Data Bases for Contaminated Site Clean-Up Technologies," EPA/540/8-91/008, May 1991.

"Memorandum on the Use of Supplemental Environmental Projects, Amendment to GM 22," James M. Strock, February 12, 1991.

USEFUL TELEPHONE NUMBERS:

RCRA/CERCLA/UST Hotline . . . . . (800) 424-9346

EPA's Office of Research and Development publishes occasional ground water and engineering issue papers. For information contact:

ORD Publications Office, Center for Environmental Research Information (CERI), (513) 569-7562

National Technical Information Services (NTIS), (703) 487-4650